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TABLE OF CONTENTS

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ORIGINAL ARTICLES

History and Observation in Cardiac Disease. By *William H. Robey, M.D.*, Boston ... 393
Hospital Administration under the Eighteenth Amendment. By *George G. Sears, M.D.*, Boston ... 397
Uremia. The Syndrome of Nitrogen Retention. By *Henry M. Feinblatt, M.D.*, Brooklyn, N. Y. ... 399
Bacillus Acidophilus Milk and Its Therapeutic Effects. By *Harry A. Cheplin, Ph.D.*, Syracuse, N. Y., *Charles D. Post, M.D.*, Syracuse, N. Y., and *Joseph R. Wiseman, M.D.*, Syracuse, N. Y. ... 405
The Surgical Importance of Torsion Deformities. By *C. L. Lowman, M.D.*, Los Angeles, Calif. ... 411
Health for the People of Boston. By *Mary Beard, R.N.*, Boston ... 414

BOOK REVIEWS

Chronic Fatigue Intoxication. By Edward H. Ochsner ... 416
Practical Morbid Histology. By Robert Donaldson, M.D. ... 416

EDITORIALS

The New England Tuberculosis Conference ... 417
The Celebration of the Twenty-fifth Anniversary of the Founding of the Rutland State Tuberculosis Sanatorium ... 418
Laboratory Service ... 419
The Campaign against Cancer ... 419
Goiter in Chicago ... 419
The Quality of Massachusetts Physicians ... 420

MISCELLANY

Medical Examinations in the Boston Health Show ... 420
Meeting of Anesthetists ... 420
The Springfield Academy of Medicine ... 421
Worcester District Medical Society ... 421
Franklin and Hampshire District ... 422
Diabetic Column ... 422

News Items ... 422

OBITUARY

Merrick Lincoln, M.D. ... 422
Frank Wallace Patch, M.D. ... 423
Dr. George B. Shattuck ... 423

CORRESPONDENCE

Bristol North District Medical Society. *Joseph L. Murphy* ... 424
Southern Medical Association Alumni Dinner. *Tom A. Williams* ... 424

NOTICES

A Course of Fifteen Lectures on the Mental Health of Children ... 424
Norfolk South District ... 424
Franklin District Medical Society ... 424
New England Society of Psychiatry ... 424
Society Meetings ... 424

Original Articles

HISTORY AND OBSERVATION IN CARDIAC DISEASE*

BY WILLIAM H. ROBEY, M.D., BOSTON,

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I.

FROM time to time one hears from various members of our profession that certain high-grade medical schools are interested principally in the education of laboratory and research students and care very little for the clinician and even less for the general practitioner. This idea must arise from a lack of understanding of the methods of instruction in these schools and a misconception of the scope and importance of research. All graduate schools, whether of business, law or medicine, try to imbue their students with a spirit of investigation. What would become of progress in the world if men in any field blindly accepted and merely used the information imparted by their instructors? What becomes of a business today that is not kept abreast of the times? It therefore admits of no discussion that medical knowledge can be advanced only through research, and medical schools which stimulate investigation in the various branches are doing the greatest good for medicine.

Dr. F. W. Peabody, in an excellent article which appeared in the BOSTON MEDICAL AND SURGICAL JOURNAL for August 31, 1922, says: "For the physician in private practice laboratory tests fall into two main classes. The first consists of those which every educated doctor should be able to carry out; and the second consists of tests which are more difficult in technique and which should be attempted only by a limited number of men who have been able to devote the time necessary to acquire specialized training. Fortunately, the first class is by far the more important of the two."

In our student days we were taught all that could be offered to make us well-informed graduates, and so today the medical student should not receive his degree until he is thoroughly grounded in all accepted laboratory methods, such as the examination of blood, urine, feces, gastric contents, spinal fluid, pleural and ascitic fluids. He should know all these methods when he enters upon his interneship, and during his hospital service he should become so familiar with them that they will form a part of his armamentarium. A few of these internes, born with the spirit of the insistent "why," will be led under the direction of a competent chief to investigate the larger problems of medicine, and occasionally from this number will emerge an investigator of renown. Consider the future of a group of one hundred recent graduates from a Class A medical school. All of these men have had the same instruction in the best clinical and laboratory methods for the recognition and treatment of disease. In the hospital they will become by practice familiar with the various methods, and whatever form their work takes in after years, they will be the better for their training. How many in a group will become investigators? Very few; sometimes not any. Some, after completing an interneship, will remain to study laboratory problems, but for a variety of reasons most of them will eventually enter some form of practice. The majority of the graduates will go from the hospital immediately into practice. Many of the laboratory methods which are introduced and much talked of do not stand the test of time, and every year a large number of young enthusiasts is required to employ them in special clinics to discover their practicability. In this way many tests are proved to be worthless and those that are valuable are made available. For the older practitioner, whose training does not include laboratory technique, a knowledge of when a test is necessary and how to correlate it with the main part of the examination is far more important than an understanding of the method of its performance.

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* Read at a combined meeting of the Berkshire, Hampden, Hampshire and Franklin District Medical Societies at Springfield, Massachusetts, October 19 1922.

The clinician in private practice cannot spend time on tests which are in a purely experimental stage and which may be ultimately discarded as worthless.

It should be remembered that the laboratory does not offer the only opportunities for research. Sir James Mackenzie has proved that. For many years he engaged in a large general practice in Burnley, England, where his observations and case records formed the basis for his monumental work on the heart. He observed, recorded and described certain phenomena of the heart and pulse, and later developed a polygraph, but he never allowed the instrumental findings to override his senses. Many of his studies were made while waiting patiently for the progress of labor.

It has been my privilege for several years to meet groups of graduate students who come for the purpose of improvement in methods of physical examination. They are almost without exception busy practitioners with an earnest desire to improve themselves in the discovery, interpretation and correlation of physical signs. In a notable number of instances when one of these students is asked to determine the cardiac condition he will immediately produce his stethoscope and will attempt to make his diagnosis from auscultation alone. Very often with him finding a murmur means finding an abnormality. At the beginning of the course he rarely inquires into the history and does not even feel the pulse. He does not stop to observe the patient's appearance, his breathing, and the numerous other physical findings which observation alone will reveal. Sir James Mackenzie once said that the stethoscope was to be used last—a plan which I have followed for many years. He used his polygraph in an effort to explain some of his observations, but it is interesting to know that he observed, studied and recorded practically every condition that the polygraph later helped to elucidate. Sometimes almost the first thing the student does is to ask about the x-ray examination or the laboratory findings. One student came because he said he was forming the bad habit of basing his diagnoses and treatments on subjective symptoms alone. The instructor is rewarded in seeing the pleasure which these men feel in recovering the power of observation and the ability to discuss the probable meaning of physical signs. At first they add a meagre physical examination to the laboratory test, but before they leave they add the laboratory tests to a complete physical examination. They have the pleasure of mental stimulation in forming an opinion based on their own unaided findings. Unless this is done medicine becomes a brainless business. Is it not possible that some of our colleagues who practice in districts remote from hospitals and teaching institutions read in medical journals or hear at medical meetings enthusiastic reports of certain laboratory and instrumental tests and not being in a position to estimate their true value feel that they are being left behind with only their antiquated methods and, therefore, lose their self-reliance? In this way they come to neglect the fundamental principles of diagnosis and by lack of use sink into a confused state of mind.

II.

In the old days, before the time of any of us, when the microscope was a curiosity and the laboratory occasionally heard of, the best physicians were experts in history-taking and especially observation. Then even the stethoscope was not a very useful instrument. Necessity heightened the powers of observation but as many methods of diagnosis came into general use the physician began to neglect the patient's appearance. An old colleague of mine recognizing an unusual form of septicaemia sent the patient into a hospital where she attracted considerable attention. Many blood and other tests were performed and as my friend visited her from day to day he noted her gradual failure. One morning the house physician assured him that improvement was shown by all the tests. "But," said my friend, "look at her." The house physician looked, but his mind was on the laboratory. By night she was dead. The laboratory tests in that case added a most valuable contribution to the subject but they blinded the physician, poorly trained in observation, to the inevitable result.

It is not uncommon to have a doctor send a cardiac patient into the hospital with a statement that there they have a machine which will tell all about the heart. No instrument will tell everything about the heart. The electrocardiograph, which has added so much to our knowledge of arrhythmia, is a most valuable laboratory instrument of the higher type, requiring special training for its manipulation and interpretation of its tracings. It may add greatly to our information in a given case, but it cannot supplant the knowledge to be gained by careful history and physical examination. Within a year I saw a woman, 39 years of age, who had led an active life and had borne six children. Her convalescence from her last confinement was uneventful, and some ten days after she had been about the house, she was awakened by the rapid action of her heart. The tachycardia lasted for two or three hours and then slowly subsided. Her previous history was negative for rheumatism, tonsillitis and other acute infections, with one exception. The reserve force of her heart had always been good. She was not conscious of any heart trouble, nor had her physician, who had attended her for years, been aware of any cardiac lesion. I will state very briefly the course of her cardiac history. After the subsidence of the tachycardia it was found that she had slight arrhythmia with a mid-diastolic murmur heard along the left sternal margin, and also a soft systolic murmur at the apex. A few weeks later there was another attack of tachycardia and about two months after that, auricular fibrillation. The mid-diastolic murmur and auricular fibrillation clearly pointed to mitral stenosis. About six months after her cardiac condition was first discovered, the patient was found one morning in an unconscious state, from which she could not be aroused, and in which she soon died. About two months before her death, electrocardiographic tracings were found to be negative, although it seemed quite certain that this woman had mitral stenosis and died of cerebral embolism. This does not in any way detract from the value of the electrocardiograph, but it does carry a caution to those who would throw too much dependence upon a laboratory test. Sir Thomas Lewis has warned against this.

HISTORY AND OBSERVATION

I have had some experience with general practice and I know that the keeping of careful records is one of its most difficult parts. The history must be recorded at the time; the notes should not be allowed to grow cold because the intervention of three or four cases will very often confuse the physician. A thorough history in heart disease takes as much time, and is often as important in the final estimation of the case, as a careful physical examination. Sometimes it is of even more importance. This is especially true in placing a value on a murmur which has no accompanying signs, and in cases of anginal heart disease.

As Mackenzie pointed out years ago, many a young person has had his life spoiled and his career ruined because too much was made of a meaningless murmur. History and observation will aid greatly in determining its importance. A healthy-looking child who can play as vigorously as his fellows with only a normal fatigue is generally without a cardiac lesion.

HISTORY AND OBSERVATION IN ENDOCARDITIS

The information to be gained by history and observation alone in general is considerable. The term, potential heart disease, recently coined by William St. Lawrence of New York is very helpful. It refers to those conditions which history and observation tell us may lead eventually to cardiac involvement if not corrected. Chorea without any other physical signs should be regarded as the one sign present of that symptom-complex which we call acute articular rheumatism. Chorea is followed in certain instances by endocarditis, and a history of this sort should lead to a thorough search for foci. St. Lawrence has been recently making an interesting study in New York of a group of children to determine the effects of tonsillectomy on the recurrence of acute rheumatic fever and chorea. Lillie and Lyons of the Mayo Clinic studied 200 consecutive cases of tonsillectomy in myositis and arthritis and concluded that the operation was justifiable in every frank case, with marked improvement in 79% of all the cases. With the prevention of arthritis comes marked reduction in cardiac disease. Alexander Lambert reported in 1919 that there was a considerable reduction in the number of cases of acute articular rheumatism admitted to the Bellevue Hospital; an improvement which he attributes to the better care of the tonsils, noses and teeth of the school children. Most of us can point to numerous cases where tonsillectomy has resulted in the prevention of recurrent acute arthritis.

One of my colleagues was called in consultation to see a case which proved to be acute pericarditis with marked dyspnoea and cyanosis. The man was *in extremis* but because the physician's aspirating set was faulty and the patient in the country, aspiration was delayed until the following day. The illness had begun one week before with a sore throat and acting on this history the consultant ordered large doses of sodium salicylate and on returning the next day, found the patient so much improved that aspiration did not seem necessary. This was a case where history alone indicated the form of medication.

HISTORY AND OBSERVATION IN CHRONIC HEART DISEASE

The clinician in private practice has a greater opportunity for the study and prevention of heart disease than the hospital physician. Most of the cases of heart disease seen in the wards of a hospital are one of three types: Either the acute heart resulting from an acute infection, or a chronic heart with an exacerbation from the same cause, or the chronic heart in some stage of decompensation. The physician in private practice has the opportunity of seeing these patients long before they reach any degree of decompensation. One of the regrets of my life is that as an out-patient physician, I was more concerned in the treatment of people who had heart disease than in people who might have it.

In distinguishing between the functional and organic murmur without any other physical signs, there is no method of physical examination which will take the place of history and observation; and in the anginal type of heart disease which is seen most commonly in private practice and very rarely in the hospital, the physician must depend in many cases almost entirely on history and observation.

Osler stated that in a large institution not more than one case of angina pectoris might be seen in a year, while a consultant in private practice may see ten or twelve in the same time, —figures which seem very small to many of us. In a ten-year period in the Boston City Hospital only sixteen cases were recorded. When angina pectoris occurs in a patient with evidence of arteriosclerosis, dyspnoea on moderate exertion, or some form of arrhythmia, the diagnosis is often easily suggested; but when the pain about the heart is complained of without evidence of cardiac or circulatory signs, the diagnosis is often difficult and sometimes impossible. If a middle-aged or old person complains of cardiac pain it should always be taken seriously. The history should be most carefully studied, and if possible the patient should be seen during an attack of pain. If that is impossible, then a very thorough history should be taken of how the pain comes, the area of distribution, the appearance of the face as observed by friends, subsequent fatigue, and, in some, sweating. Sometimes in early cases the attack is induced by exertion. The rate and rhythm of the pulse should be observed with care.

While the electrocardiograph has not given any positive evidence as yet of coronary disease, the heart should be studied electrocardiographically when possible. It is surprising in these middle-aged and elderly patients, with their history of cardiac pain, or a sense of smothering, of clutching about the throat, how few physical signs may be found; but the history of pain, breathlessness, or easy fatigue on exertion are the three outstanding signs of a heart that may soon fail. No matter how slight the physical signs may be in a middle-aged or elderly person, the history of these symptoms alone or in combination should make the physician cautious. It is very important to inquire carefully into the effort tolerance of these patients. The question is, can they carry on?

I saw, with a colleague, a well-nourished, middle-aged business man who had carried out the routine for nearly thirty years of every morning walking for about two blocks up an incline to a street car. For two years he had noticed he could not do it without breathlessness. One morning he ran for his car, collapsed, and was in his bed when he recovered consciousness. His physician could find very few signs of heart disease, but because of his history he urged a change in his mode of life. The patient absolutely refused to heed the warning and two weeks later had another collapse in which he died. This was the result of undue physical strain on a damaged heart. The physician questioned the condition of the heart because he had never been able to hear a murmur, but the very suggestive history in this case was sufficient.

Another colleague recently examined a man's heart, pronounced it normal, and told him he might take an extensive trip. While in the far West, he collapsed, was examined electrocardiographically, and found to have some form of block. He revived in the hospital but died a few weeks later. The history that this man was frequently awakened in the night with attacks of breathlessness was not brought out at the original examination. If it had been, my friend would have known that there was a serious disturbance of the circulation even though his examination was negative.

HISTORY AND OBSERVATION IN TREATMENT

When we look at the list of cardiac remedies, we are struck by its brevity. A great many drugs have been tried in heart disease, and some have been quite recently re-investigated; but after all, the most notable are digitalis, morphia, the nitrates, and recently, quinidine sulphate.

Digitalis has uses in a variety of cases and may be given as a cardiac tonic to patients with very little cardiac disturbance and with normal rhythm. In the decompensation cases of the congestive type, digitalis is helpful, but when decompensation has once occurred, it means that the treatment must be given over and over again.

Quinidine sulphate will occasionally abolish an absolute irregularity of the heart action, and its use has possibly added an important drug to the list of cardiac remedies. It cannot be used with the same ease as digitalis, but only in carefully selected cases and under close and competent observation.

Fibrillation predisposes to the formation of clots and a return to the normal rate tends to break them up and to the formation of emboli. There are various toxic effects of quinidine which we need not consider now. The chief danger is from the production of emboli. Before using quinidine, history and observation play their part and should offer certain warnings to the watchful physician. Sir Thomas Lewis has used quinidine with care and has had no untoward results, but, as he says, others have been less fortunate. Hardly any large hospital in Boston, where cases of auricular fibrillation have been treated, after careful observation, has been without some unfortunate, and in some instances, fatal results. Recently I saw a man with auricular fibrillation, who, because of the recent onset of the condition, was considered as possibly a favorable subject for the use of the drug. On going into his history it was found that he had had two attacks suggesting embolism and it, therefore, seemed to court disaster if we used the drug. Cases with signs of congestion are generally considered unfavorable, therefore we must be careful not to give quinidine just because there is a gross irregularity of the heart, but only in cases where the advent of fibrillation is quite recent and in which we feel reasonably sure that there is a fairly competent heart muscle. If we have a drug which will restore normal rhythm in auricular fibrillation it is a great help, but auricular fibrillation once established is sure to recur.

Last summer I visited Sir Thomas Lewis in his clinic at the University College Hospital. He said to one of his assistants, in speaking of the management of a case, "Unless you inquire carefully into what the patient has done, is able to do now, and plan out what he is to do in the future, you have added very little to his comfort and the management of his case." History and observation enter into every case. Drugs which we give merely help, with rest, to restore if possible the compensation of the heart, and unless we observe the patient's effort tolerance and plan for him accordingly, we shall do very little towards his progress.

The clinician in private practice has unusual opportunities for seeing patients in whom there is only potential heart disease or its most incipient forms. From children he can remove those foci which often cause acute rheumatic fever and having done that he has taken a long step towards the prevention of heart disease. Tonsillectomy does not remove the possibility of heart disease in every case, because the operation may have been performed too late, or there may be those cases in which heart disease occurs without an apparent focus. Furthermore, tonsillectomy will not prevent an occasional pharyngitis. Every year hundreds of pages are written about the methods of administering our few cardiac remedies—remedies which, when actually needed, are given to essentially hopeless cases, but more attention should be given in the literature to the duty of clinicians to anticipate and remove the causes of heart disease by history and observation. To this end we should encourage people to have routine physical examinations, for only in this way can diseased conditions be discovered when physical signs are quite lacking or only slightly in evidence.

I have already said enough to show how highly I regard the laboratory, but it must be kept in its right place. The physician who makes a practice of throwing away for a laboratory test, what history, observation and experience have taught him, is on the verge of medical downfall; but he who uses the laboratory as a valuable adjunct to his own knowledge, becomes an important member of the profession and a valuable asset to the community in which he practices.

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HOSPITAL ADMINISTRATION UNDER THE EIGHTEENTH AMENDMENT

BY GEORGE G. SEARS, M.D., BOSTON

It is the purpose of this brief paper to describe some problems in hospital administration, produced by the passage of the Eighteenth Amendment, plus the reaction of that portion of the body politic, which finds refuge in a large municipal hospital, to a compulsory regulation of its conduct.

While the limitations of alcohol as a stimulant in disease are now better recognized, and the amount used for that purpose has consequently diminished, in every large institution like the Boston City Hospital, devoted to the care of the sick, large quantities are still required for pharmaceutical preparations and for external use. It is bought and stored in bulk. Previous to the passage of the Volstead Act, it was regarded as a commodity and handled like other hospital supplies. Since then experience has taught that it must be classed with the precious metals, and guarded as such. Too bulky to be locked in the safe with other valuables, special quarters were found necessary to protect it from the persistent and determined efforts of those who, so far as known, had never before committed a felony. Safety was finally secured only by the use of solid masonry, with the door of the store-room reinforced by heavy railroad iron and barred by three locks. The comparatively small amount required for daily use in the dispensary must be protected by double doors, securely locked. Sterilizing solutions in the wards are colored a lurid green and denaturized, but the risk of employing dangerously poisonous substances for the latter purpose was illustrated by an epidemic of violent gastric symptoms, with victims in almost every class of the hospital population, immediately after tartar emetic was first used.

The number of patients with acute alcoholism admitted to the Boston City Hospital from 1910 to 1915 varied between 312 and 504, with a general, but not very well marked, tendency to increase; but for some reason, possibly the shadow cast by coming events, it rose in 1916 and 1917 to 1032 and 1153 respectively. The figures dropped again during the following two years to nearer normal, 540 and 564. In 1920 they jumped to 643, and have since risen almost by geometrical progression, 1921 scoring 1295 admissions, and 1922, 2226. A partial explanation of these later figures is found in the attitude of the police, who have been compelled, as the result of several unfortunate experiences, to consider the present alcoholic a person potentially dangerously ill. He cannot safely be left in a cell in a station house, as in the pre-prohibition period, to sleep off the effect of his indulgence. Instead of being arrested and booked as a drunk, he is brought to the hospital and left for observation. Most of these cases are later discharged in the usual routine way and never appear in the police records. On Saturday nights five patrol wagons at one time have been lined up before the door of the Accident Room, in which every available space has often been occupied by patients in all stages of alcoholic intoxication,—a noisy, filthy crowd of swearing, fighting, obscene individuals, who are kept partly in order by a detail of police. Conditions at the Haymarket Relief Station are at times as bad, if not worse. The unfortunate person brought in for a surgical accident has to be cared for in some distant place, where quiet can be assured.

A great change has been noted during the past five years in the type of the alcoholic cases admitted. The blear-eyed, red-nosed, bloated old soak has practically disappeared. Some have died; some have perhaps reformed; while others may lack the price or the initiative to overcome the slight difficulties which are now associated with obtaining the means of intoxication. The patients of today are almost all young individuals between twenty and thirty years of age, of the class to whom the word "forbidden" is a challenge and the possession of liquor an adventure.

The number of women admitted for alcoholism has always been small, and it still remains so. With the closure of places where intoxicants are openly sold, women who over-indulge do so chiefly at home or in the company of their friends, who take care that they escape the notice of the police. Medical attention, if required, is furnished by their own physician and not at a hospital. If women appear in appreciable numbers in hospital statistics as a result of intoxication, they are more likely to show their presence by increasing the number of those who enter to give birth to illegitimate children, the result of the loss of self-control on the part of the mother, which alcoholic indulgence has produced. Our own maternity wards have not been open long enough to furnish evidence, but the matron of an institution which cares for a class of girls who are noted for their chastity, reports that an increase in illegitimate births has occurred in recent years, and she attributes it, from her study of the history of the cases, to the effects of the Eighteenth Amendment. Before accepting such an opinion as true, the general laxness of the present day must be considered, and it must be remembered that the combination of an automobile, a hip-flask, and a lonely country road is not new, but what was once a sordid experience is now cloaked with an air of mystery and a spirit of adventure.

Though it concerns hospital administration only as the cause of the new problems which have to be met, it may interest the curious to learn the form of intoxicants which are now drunk. At first every compound which was reputed to contain alcohol and possess a "kick" was used. The variety was great and the reputation deserved. One ingenious individual had led a stream of illuminating gas through a bottle of water and had drunk the resulting mixture. If his story was true, that this was the extent of his transgression, the effect appeared to be satisfactory. Cases of wood alcohol poisoning were once comparatively frequent, but are now rare. The repeated admission of certain patients, who appear never to have refused anything reputed to be intoxicating, suggests that there may be a congenital or acquired immunity both to wood alcohol and to many of the substances which are used for denaturing. One of the most persistent repeaters, when asked what form of denatured alcohol he preferred, said that it was a matter of indifference; he had no choice. Lately, as ways for circumventing the Volstead Act have become better understood, the usual forms of stimulation are home brew or "white mule," certain lotions advertised for bathing purposes, re-distilled denatured alcohol, and alcohol denatured by the addition of kerosene or other light petroleum product called "smoke," from the white color produced when water is added.

The pathological laboratory recently tried for weeks to secure enough "white mule" for purposes of analysis and experimentation by appropriating that which had been confiscated from the patients, but the attempt was unsuccessful, and it was necessary to obtain it from other sources. During the earlier months of the Volstead period, no difficulty would have been met, but it appears to be unnecessary to carry a supply upon the person now that home brewing has become a household industry, and whatever is needed can be obtained with comparative ease. According to its victims, the price has fallen from fifty cents a "shot" to three for fifty, which has always been considered its normal cost.

It seemed for a time that delirium tremens would become an extinct disease, but cases are again appearing, as its victims become familiar with the sources of supply. While there are some indications which stimulate the hope that the peak of our load has been reached, and that with improvement in the technique of home manufacture a less poisonous compound will be provided, with a resultant decrease in our hospital population, it cannot be expected that the conditions outlined in this paper will be materially improved. They must be met by the trustees of every municipal hospital, where public opinion against prohibition is sufficiently strong to make attempts at enforcement little more than a farce. Trustees are taxed with the care of a class of patients who require institutional treatment, but are unfit to be grouped with others or to be attended by young pupil nurses, or, in fact, by any women of whatever age. Either a separate institution must be provided or they must be segregated in wards so remote that their noisy inmates cannot disturb others. A special corps of nurses must be provided, and the coöperation of the police obtained. This solution means a large increase in the expense of hospital administration, for which the taxpayers are liable.

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UREMIA. THE SYNDROME OF NITROGEN RETENTION

BY HENRY M. FEINBLATT, M.D., BROOKLYN, N. Y.

[From the Department of Internal Medicine, The Long Island College Hospital, Brooklyn, N. Y.]

In a previous article[1] on the subject of uremia it was suggested that this condition be studied on the basis of nitrogen retention. In other words, instead of investigating the blood chemical findings in patients clinically considered uremic, the method pursued was to analyze the other evidences exhibited by patients with known nitrogen retention. It was felt that the term "uremia," as commonly used, including, as it does, almost any group of symptoms which ushers in the fatal ending in nephritis, might cover a multitude of diagnostic sins.

Amaurosis and convulsions in a nephritic individual often furnish the excuse for the diagnosis of "uremia." So often are these manifestations associated with areas of focal edema in the occipital lobe and the motor centers, respectively, that it would be far better to try to interpret these symptoms in terms of cerebral anatomy. An indefinite hemiplegia in a comatose patient with nephritis has often been classed as an evidence of uremia, until the necropsy disclosed a cerebral hemorrhage. The diagnosis of "uremia," as commonly used, really includes a hodge-podge of pathologic conditions, many of them dependent upon extrarenal lesions. On the subject of the pseudouremias, the author[2] is reporting three cases clinically diagnosed as uremia, in spite of the absence of nitrogen retention, in which at necropsy the symptomatology was abundantly explained by the brain lesions found.

Animals rendered uremic by double nephrectomy show an entirely different picture from the classical clinical description. The difference lies mainly in the conspicuous absence of convulsions. Similarly, in four cases of total ablation of renal function observed in man, two of bichlorid poisoning with anuria, one of bilateral impaction of the ureters with calculi, and one of surgical removal of the only functioning kidney, the clinical picture comprised headache, increasing drowsiness gradually merging into coma, muscular irritability, increased tendon reflexes, restlessness, and vomiting. Convulsions, amaurosis, transient paralyses, and delirium were not present in these cases.

The idea of separating the syndrome of nitrogen retention from the general group of conditions formerly called uremic is not new. Widal and Javal[3] in 1905 distinguished two separate conditions, *azotémie* (nitrogen retention) and *chlorurémie* (chlorid retention). They contrasted the clinical syndromes resulting in these states and showed that nitrogen and chlorid retention are dependent upon different pathologic mechanisms and give rise to different symptoms. *Azotémie* and *chlorurémie* may occur separately, or they may coexist. The differentiation of these two states is of great importance as regards the dietetic treatment, inasmuch as one calls for a restriction of nitrogen intake, while the other requires limitation of chlorids and water.

Foster[4] in 1916 divided the entire group into three types, that due to nitrogen retention, that due to cerebral edema and other brain lesions, and that due to a convulsive toxin.

It is proposed here to confine the use of the term "uremia" to the syndrome of nitrogen retention. This latter condition is a "pure type," and deserves separate study as such.

Without attempting to be too inclusive, the following schedule is suggested as a working basis for a classification of the general group formerly bunched together under the heading "uremia."

I. Uremia—the syndrome of nitrogen retention.

II. The pseudouremias:—(absence of nitrogen retention).
  1. Cerebral group:—
    a. Focal edemas (characterized by convulsions, amaurosis, evanescent hemiplegias, astereognosis, paresthesias, etc.) due to edema of cortical centers.
    b. Vascular accidents, hemorrhage, thrombosis or embolism (when associated with advanced nephritis, these are often overlooked, because a vague hemiplegia with coma can so readily be captioned "uremia").
    c. Cerebral arteriosclerosis (disturbed cerebral function according to location).
  2. Cardiovascular group:—
    a. Manifestations due to hypertension.
    b. Manifestations due to myocardial insufficiency.
    c. Manifestations due to cerebral arteriosclerosis (1, c).
  3. Pulmonary group.
  4. Miscellaneous group, including syndromes due to gastro-intestinal conditions, complicating infections, etc.

The present paper deals exclusively with the consideration of the chemically uremic group. To the 29 cases analyzed in the previous article,[1] there were added the 19 cases studied during the year 1922 at the Long Island College Hospital, making a total of 48.

It is to be emphasized that this series does not represent a selected group. Every patient whose blood urea nitrogen rose to 50 mg. or more per 100 c.c. of blood was included. Inasmuch as blood chemical analysis is a routine procedure on the Medical Service of the Long Island College Hospital, the cases were truly picked out by a process of mechanical winnowing. The tabulated analysis of these charts must, therefore, represent the record, in so far as the study of nitrogen retention at this hospital is concerned. As the whole analysis was conducted along the line of hard and fast rules, the prejudices of the writer could not be a factor in influencing the results.

Table I (see pp. 402, 403) enumerates the 48 cases upon which this study was based. The complete data abstracted from these cases are summarized elsewhere under the headings blood chemistry, etiologic factors, symptomatology, urinary findings, blood findings, eye signs, cardiovascular changes, complications, and outcome.

BLOOD CHEMISTRY

Normal figures: Urea nitrogen 12-15 mg., uric acid 2-2.5 mg., creatinin 1-1.5 mg., sugar 90-110 mg. per 100 c.c. The determinations were made according to the method of Folin and Wu.[5] It was a routine procedure to draw the blood before breakfast and to make the analysis the same morning.

Urea nitrogen retention was arbitrarily selected as the criterion upon which to base this study. The reliability of the blood urea nitrogen figure as an index to renal capacity cannot be questioned. In this series the parallelism between the severity of the uremic condition and the degree of retention was quite evident. When complications were present this relation was, of course, disturbed. The prognostic significance of urea nitrogen retention is well exemplified by the fact that 43, or 90 per cent., of the patients in this report died, while only one left the hospital improved. Readings of 300 or more invariably portended death at a very early date.

In regard to the interpretation of the uric acid of the blood, the writer dissents from the current view which considers retention of this substance to be an evidence of incipient nephritis. In an analysis of 1500 blood chemical examinations,[6] 47 of which gave evidence of specific retention of uric acid (3.5 mg. or more per 100 c.c., without concurrent retention of urea and creatinin), the uricacidemia present was associated with nephritis in only two instances. This study indicated that accumulation of uric acid in the blood may occur in many different, totally unrelated conditions.

The lack of parallelism between the figures for uric acid, on the one hand, and those for urea nitrogen and creatinin, on the other, becomes apparent from a study of Table I. For example, in Case 22 the uric acid was only five mg. to 375 mg. of urea nitrogen, while in Case 11 the uric acid measured 50 mg. to 300 mg. of urea nitrogen. Case 22 is of especial interest in this connection. With mounting figures for urea nitrogen and creatinin, and deepening coma terminating in death, the uric acid level nevertheless sharply declined. Findings such as these are incompatible with a theory which holds uric acid retention to be a sensitive sign of renal inadequacy.

Creatinin bears a more constant relation to urea nitrogen, and its figures appear to increase in the same ratio. Retention of this substance is unquestionably of grave prognostic import. An analysis of 1500 blood chemical examinations[7] yielded 43 patients whose creatinin values exceeded 2.5 mg. per 100 c.c. of blood, and in every instance there were other unmistakable signs of grave renal deficit. Fourteen of these individuals attained creatinin figures of 10 mg. or more per 100 c.c. of blood, and all were dead within 13 days, the average length of life being four days. In the series referred to, there was not a single instance in which retention of creatinin occurred unassociated with that of urea.

Moderately increased sugar values frequently accompany nitrogen retention, but this finding is far from constant; in fact, normal and subnormal sugar values are often quite compatible with maximal grades of nitrogen retention. Thus, in Case 4 (Table I), a urea nitrogen value of 300 mg. was associated with a sugar reading of only 90 mg. An analysis of 81 cases showing hyperglycemia[8] gave only three instances in which the high sugar reading was attributable to nephritis. In these cases, the increase of blood sugar was moderate.

ETIOLOGIC FACTORS.

The etiologic factors investigated were the race, family history, sex, age, occupation, underlying renal condition, and antecedent infections and intoxications.

Race: All were of the white race.

Family history: A history of nephritis in the immediate ancestors was obtained in only six cases.

Sex: There were 33 males and 15 females. These figures are approximately proportional to the relative rates of admission for the sexes to the medical service.

Age:

1st decade	0	5th decade	14
2nd decade	1	6th decade	4
3rd decade	12	7th decade	4
4th decade	12	8th decade	1

Thus 38 cases, or 79 per cent., occurred between the ages of 20 and 50. Only one instance was noted before the age of 20. In younger patients true chemical uremia is unusual. Here symptoms due to cerebral edema complicating acute glomerular nephritis are the rule. The distinction is of supreme importance in making the prognosis.

Occupation: A study of the occupations of these patients revealed no apparent relation to the condition.

Underlying renal condition:

Chronic glomerular nephritis	30
Mixed type, chronic glomerular nephritis plus nephrosis	4
Nephrosis	3
Renal condition not determined	3
Necrosis due to bichlorid poisoning (anuria)	2
Acute glomerular nephritis	2
Amyloid kidney	1
Arteriosclerotic kidney	1
Nephrectomy, one kidney functionally useless	1
Renal tumor	1

In 34 cases, or 71 per cent., chronic glomerular nephritis was responsible for the retention. In striking contrast to this figure, uremia was attributable to acute glomerular nephritis only twice. In this connection, however, it must be kept in mind that acute nephritis is more apt to affect younger patients, who form but a small percentage of the total admissions to the hospital.

Antecedent infections and intoxications: Only those antecedent infections and intoxications which bore an apparent relationship with the onset of uremia were included in this tabulation.

Tonsillitis	9	Malaria	1
Scarlet fever	7	Diphtheria	1
Rheumatism	3	Gout	1
Syphilis	3	Infected teeth	1
Bichlorid poisoning	2	Cholecystitis	1
Empyema	1	Pneumonia	1
Pulmonary tuberculosis	1	Amebic dysentery	1

SYMPTOMATOLOGY.

Chart Showing Frequency of Symptoms.

Drowsiness	34	Diarrhea	6
Vomiting	29	Hiccough	6
Coma	20	Delirium	5
Headache	18	Epigastric pain	5
Dyspnea	18	Anuria	4
Edema	17	Ascites	4
Restlessness	15	Chills	4
Increased tendon reflexes	14	Precordial pain	3
Nocturia	13	Petechial hemorrhages	2
Visual disturbances	13	Itching	2
Emaciation	12	Backache	2
Twitchings	12	Hematemesis	1
Vertigo	8	Hemoptysis	1
Epistaxis	8	Hematuria	1
Cough	7	Pain in limbs	1
Polyuria	7	Tetany	1
Convulsions (within an hour of death)	6		

It is noteworthy that the symptoms standing highest in frequency are, with the exception of dyspnea and edema, those observed in experimental animals and in cases of total ablation of renal function in man. The essential symptoms of uremia, therefore, are increasing drowsiness, gradually merging into coma, vomiting, restlessness, headache, increased tendon reflexes, and muscular twitchings. The numerical importance of dyspnea and edema is probably exaggerated by concurrent cardiac decompensation in a certain percentage of the cases.

The low frequency of convulsions is in striking contrast to the importance so commonly attached to them. In all six instances, the convulsions did not appear until immediately before death. They were apparently due to asphyxia of the brain. Convulsions should not be looked for as part of the picture of chemical uremia. Their presence indicates cerebral pathology. The author[2] is reporting two cases, in which the patients, nephritics with normal blood chemistries, were clinically considered uremic because of severe convulsive seizures. At necropsy, both showed marked cerebral edema.

TABLE I

ANALYSIS OF THE BLOOD CHEMICAL FINDINGS IN THE FIRST SERIES OF 29 CASES

No.	Sex	Age	Blood Chemistry. Urea N.	Uric Acid	Creatinin	Sugar	Blood Pressure	Outcome	Diagnosis and Necropsy
1	M	43	100	16	3.3	133	S.225 D.130	Died	Chronic glomerular nephritis. Necropsy showed chronic glomerular nephritis plus arteriosclerosis of the renal vessels and cardiac hypertrophy.
2	M	49	60 75	8.3 10	2 1.8	125 125	S.196 D.150	Died of myocardial insufficiency	Chronic glomerular nephritis complicated by bronchopneumonia and myocardial insufficiency.Necropsy showed chronic glomerular nephritis, cardiac hypertrophy and dilatation,and passive congestion of liver and spleen.
3	F	21	120	12.5	7.5	200	S.135 D.80	Died	Chronic glomerular nephritis,complicated by perforation of uterus with pelvic peritonitis.Necropsy showed enlarged,édematous kidneys with cloudy swelling and chronic glomerular nephritis;perforation of uterus with pelvic peritonitis;gallbladder and spleen twice normal size.
4	M	66	300 225	12.5 16.2	12.5 10	90 125	S.190 D.125	Died	Chronic glomerular nephritis complicated by myocardial insufficiency.
5	M	47	100 101	8 8.9	3 3	118 142	S.198 D.145	Died	Chronic glomerular nephritis complicated by myocardial insufficiency and pulmonary emphysema.
6	M	38	56	-	7	143	S.235 D.130	Died,cardiac decompensation.	Chronic glomerular nephritis complicated by mitral insufficiency with hydrothorax.
7	M	58	150	5.5	5	110	S.140 D.85	Died	Chronic glomerular nephritis complicated by general paresis.
8	M	20	97	5	11.8	166	S.160 D.100	Died	Chronic glomerular nephritis.
9	M	24	60 100 60	5 10 8.3	2.4 6 5	220 166 100	S.212 D.160	Died	Chronic glomerular nephritis
10	M	27	150 130	14.3 9.8	3.6 15	125 200	S.150 D.110	Died	Chronic glomerular nephritis.
11	F	33	300	50	28	240	S.195 D.130	Died	Chronic glomerular nephritis.
12	M	57	150 300	7.1 10	2.25 6	250 285	S.235 D.165	Died	Chronic glomerular nephritis.
13	M	26	300	35	4.6	114	S.195 D.130	Died	Chronic glomerular nephritis.
14	M	24	200 300	20 20	15 20	181 235	S.162 D.78	Died	Chronic glomerular nephritis.
15	F	46	- 300 300	20 10 -	6 17 30	200 195 285	S.162 D.78	Died	Chronic glomerular nephritis.
16	F	75	300	15	20	333	S.150 D.70	Died	Chronic glomerular nephritis.
17	M	42	50	-	2.6	133	S.190 D.115	Disch.improved	Chronic glomerular nephritis.
18	M	28	60 75	6.2 10.2	15 14	181 136	S.170 D.130	Died	Chronic glomerular nephritis.
19	M	28	108	7.3	11	147	S.155 D.90	Disch.unimproved.	Mixed type,chronic glomerular nephritis plus nephrosis.
20	F	18	20 15 20 60	4.2 2 5.5 10	2 1.9 3 3	100 116 90 100	S.195 D.130	Disch.unimproved. Died,date unknown.	Mixed type,chronic glomerular nephritis plus nephrosis.

ANALYSIS OF THE BLOOD CHEMICAL FINDINGS IN THE FIRST SERIES OF 29 CASES.

No.	Sex	Age	Blood Chemistry. Urea N.	Uric acid	Creatinin	Sugar	Blood-pressure	Outcome	Diagnosis and Necropsy.
21	M	48	75 75 60 37.5	5 12.5 6 4.2	6 6 4.9 3	115 91 133 133	S.148 D.85	Disch. unimproved.	Mixed type, chronic glomerular nephritis plus nephrosis.
22	M	25	50 300 300 375	6.2 12.5 8.2 5	7.5 8.6 15 20	133 200 142 137	S.175 D.90	Died.	Mixed type, chronic glomerular nephritis plus nephrosis.
23	F	25	140	-	13.3	166	S.134 D.90	Died.	Necrosis of kidneys due to bichlorid poisoning. Decapsulation of both kidneys. Necropsy showed coagulation necrosis of kidneys, cloudy swelling of liver, congestion of left lung, and areas of necrosis in the stomach.
24	F	29	100 200 115 230	10 - 4.3 12.5	6.5 7.5 6.6 7.33	142 - 200 -	S.132 D.84	Died.	Necrosis of kidneys due to bichloric poisoning. complicated by gangrenous stonatitis and gastroenteritis.
25	M	39	375	35.7	15	86	S.85 D.55	Died.	Diagnosed as nephrosis secondary to pulmonary tuberculosis. At necropsy, the cells of the convoluted tubules were swollen and finely granular; no colloid droplets present. Capillaries through out, including glomerular tufts, congested.
26	M	34	55.8 39	- -	- 2.9	119 -	S.104 D.78	Died of myocardial insufficiency.	Nephrosis, cause undertermined, complicated by ascites and hydrothorax.
27	F	43	50 60	8.3 4.1	3.7 4.2	166 111	S.120 D.92	Died.	Acute glomerular nephritis. Necropsy showed hemorrhagic glomerular nephritis.
28	M	58	16 83	3.4 8.3	1.5 2.9	56 133	S.190 D.140	Died of pneumonia myocardial insufficiency.	Arteriosclerctic kidney, complicated by chronic myocarditis and pneumonia.
29	F	23	158 60 100	25 11 16	7.5 6.7 10.3	- - 100	S.140 D.90	Died.	Nephrectomy, other kidney functionally useless.

TABLE I—*continued*

ANALYSIS OF THE BLOOD CHEMICAL FINDINGS IN THE SECOND SERIES OF 19 CASES

				Blood Chemistry.						
No.	Sex	Age	Date	Urea N.	Uric Acid	Creatinin	Sugar	Blood Pressure	Outcome	Diagnosis, Complications, Necropsy.
30	M	31	1/25/22 2/3/22 2/0/22 2/16/22 2/28/22 3/8/22 3/20/22 3/28/22 4/3/22	37.5 37.5 50 42.8 60 75 75 100 125	7.1 5 2.9 5 4.5 12.5 9 16.2 10	8.5 4.28 2.5 3.7 3.9 5 4.2 10 6.7	93 95 77 142 160 155 108 90 80	S.145-210 D.90-150	Died 4/19/22	Chronic glomerular nephritis
31	M	37	10/9/22	60	10	3.7	153	S.220-228 D.130-142	Died 10/16/22	Chronic glomerular nephritis
32	F		4/4/22	150	-	4	137	S.98-165 D.55-98	Died 4/9/22	Chronic glomerular nephritis Death due to acute lobar pneumonia
33	M	60	3/20/22	60	10	3.3	381	S.170 D.85	Died 3/20/22	Papilloma of bladder.Suprapubic cystotomy and excision Renal tumor,nature undetermined. Postoperative ileus and myocardical failure.
34	F	42	4/14/22	125	7	5	166	S.178-208 D 102-115	Died after discharge Sep 1922.	Chronic glomerular nephritis.
35	M	38	11/10/22 11/15/22	50 50	10 16.2	7.5 7.5	200 153	S.142 D.84	Unimproved 11/18/22	Chronic glomerular nephritis.
36	M	44	1/30/22 2/7/22	100 180	5.5 7	10 18	118 200	S.135-154 D.85-96	Died 2/8/22	Chronic glomerular nephritis.Necropsy:Kidneys of equal size, capsule adherent,surface finely granular.Cortex 1 to 2 mm. thick Microscopically,the great majority of the glomeruli were shrunken and hyaline.The corresponding tubules were atrophic,degenerated and filled with casts. In intact areas,hypertrophied glomeruli and tubules were seen. The arteries showed advanced sclerotic changes. Extrarenal findings: Mitral stenosis,cardiac hypertrophy and dilataion, chronic interstitial myocarditis,chronic pulmonary tuberculosis
37	M	64	5/15/22	125	25	2.7	222	-	Unimproved 5/16/22	Carcinoma of stomach;renal condition not determined.
38	M	35	3/23/22 3/28/22	37.5 100	5 6	3.1 2.7	91 123	S.180-195 D.125-130	Died 3/21/22	Chronic glomerular nephritis.Complication,cerebral hemorrhage Necropsy: Death due to hemorrhage into the left subthalamic region of brain,extending into all of the ventricular cavities.Kidneys contracted;stripping capsule left finely granular surface. Cortical markings almost entirely obliterated.Microscopically, the glomeruli were small and shrunken and showed thickened capsules partially or completely hyalinized tufts,and a few old adhesions between the tufts and the capsules.Corresponding tubular areas showed increased connective tissue,round cell infiltration, and obliteration of tubules. Some of the glomerular tufts contained thrombi
39	M	45	9/30/22 10/7/22	37.5 60	6.2 10	3.3 5	222 166	S.222-264 D.140-145	Died 10/11/22	Chronic glomerular nephritis. Necropsy:Left kidney weighed 150 gm surface granular,cortex diminished in thickness.Right kidney weighed 50 gm,lobulated,cortex almost obliterated,medulla mostly fat. Microscopically, the glomeruli were either hyalinized or had thickened capsules.There was considerable fibrosis,with alternating areas of compressed and dilated tubules.

ANALYSIS OF THE BLOOD CHEMICAL FINDINGS IN THE SECOND SERIES OF 19 CASES.

				Blood Chemistry						
No.	Sex	Age	Date	Urea N.	Uric acid	Creatinin	Sugar	Blood-Pressure	Outcome	Diagnosis, Complications, Necropsy.
40	M	47	9/26/22 9/28/22	75 75	3 5.5	6 5	222 111	S.200 D.110	Died 10/2/22	Chronic glomerular nephritis. Necropsy: Kidneys one-half normal size, weighed 70 gm. each; capsules adherent, surface granular, reddish in color. Microscopically, many glomeruli were shrunken, others were hyalinized or showed thickened capsules, Many collecting tubules were obliterated by connective tissue, others were dilated and full of desquamated cells. The smaller arteries showed sclerosis with narrowing and, in some cases, obliteration of the lumina. In general, the inflammatory changes were less marked than the arteriosclerotic.
41	F	39	10/23/22	60	6.2	2	142	-	Died 10/23/22	Lobar pneumonia, complication pericarditis with effusion. Necropsy showed hepatization of right upper lobe, with central involvement of middle lobe. Kidneys showed nephrosis and congestion. Microscopically, there was marked cloudy swelling of the tubules. The glomeruli were normal.
42	M	32	12/10/22	75	10	10	222	S.135-150 D.70-90	Died 12/21/22	Chronic glomerular nephritis. Complication parotitis.
43	F	67	3/6/22	300	33.3	30	282	S.160 D.96	Died 3/6/22	Carcinoma of uterus,metastasis to mediastinum. Patient not in hospital long enough to investigate renal condition.
44	F	45	12/31/21 1/6/22 2/7/22 2/23/22	100 100 180 150	12.5 18 15.2 25	8.7 10 12 21.4	153 166 222 110	S.175 D.120	Died 2/26/22	Chronic glomerular nephritis.
45	M	35	2/24/22	150	16.5	20	148	S.140 D.80	Died 2/24/22	Acute glomerular nephritis. Complication, trifacial neuralgia.
46	F	43	1/3/22 1/11/22	60 37.5	1.5 3.8	3.7 2.7	165 250	S.116-130 D.72-90	Died 1/20/22	Cystitis, myocardial failure, dilatation of the stomach. Necropsy: Kidneys large and swollen, cortex pale, macroscopically nephrosis. Dilatation of heart and dilatation of stomach.
47	M	33	6/2/22 6/8/22	150 150	12.5 6.2	7.5 10	237 166	-	Died 6/12/22	Chronic glomeruler nephritis.
48	M	58	11/9/22	60	7	4.3	142	S.128 D.88	Diec 11/16/22	Chronic cholecystitis; cholelithiasis. Renal condition undetermined.

URINARY FINDINGS

Some abnormality of the urine was present in every case except one (Case 37).

Albuminuria	46
Cylindruria	30
Hyposthenuria	19 out of 23 cases
Red blood cells in urine	17
Complete anuria	1

BLOOD FINDINGS

Red blood cell count (42 cases):

1,500,000–2,000,000	1	3,500,000–4,000,000	7
2,000,000–2,500,000	2	4,000,000–4,500,000	13
2,500,000–3,000,000	2	4,500,000–5,000,000	7
3,000,000–3,500,000	8	5,000,000–5,500,000	2

The average red blood cell count was 3,690,000.

Hemoglobin by Sahli's method (41 cases).

20%–30%	1	60%– 70%	14
30%–40%	1	70%– 80%	12
40%–50%	2	80%– 90%	2
50%–60%	8	90%–100%	1

The average hemoglobin was 63 per cent.
The average color index was 0.85.

WASSERMANN REACTION

Positive	4
Negative	32
Not reported	12

One of the positive cases was complicated by general paresis; one other positive Wassermann was explained by the fact that the patient had a temperature of 103° F. with lobar pneumonia at the time his blood was drawn. Retained nitrogen does not seem to interfere with the Wassermann reaction.

EYE SIGNS

Papillo-edema with vascular degeneration	13
Albuminuric retinitis with vascular degeneration	11
Retinal hemorrhages with vascular degeneration	11
Vascular degeneration uncomplicated	4
Stiff pupils	3
Ptosis of upper lid	2
Exophthalmos	2
Petechial hemorrhages over sclerae	1

CARDIOVASCULAR CHANGES

The cardiovascular changes investigated were the blood pressure and cardiac hypertrophy.

BLOOD-PRESSURE

Systolic.		Diastolic.		Pulse-pressure.	
75–100	1	50– 75	1	20– 40	3
100–125	2	75–100	21	40– 60	16
125–150	10	100–125	6	60– 80	15
150–175	12	125–150	12	80–100	9
175–200	11	150–175	5	100–120	2
200–225	4				
225–250	4				
250–275	1				

The average systolic blood pressure was 171.
The average diastolic blood pressure was 108.
The average pulse pressure was 63.

CARDIAC HYPERTROPHY

Cardiac hypertrophy present	27
Cardiac hypertrophy absent	17
Cardiac hypertrophy doubtful	4

It is probable that in some of the cases in which cardiac hypertrophy was recorded as absent, the heart was actually enlarged, although this condition was not apparent on clinical examination. The fact remains that in uremia the heart may often seem to be normal in size.

Complications:

Myocardial insufficiency	5
Lobar pneumonia	3
Pulmonary tuberculosis	2
Perforation of uterus with pelvic peritonitis	1
Bronchopneumonia	1
Cerebral hemorrhage	1
Cerebral thrombosis	1
Mitral insufficiency	1
Trifacial neuralgia	1
Cholelithiasis and cholecystitis	1
Mitral stenosis	1
Parotitis	1
Carcinoma of stomach	1
Carcinoma of uterus with mediastinal metastasis	1
Papilloma of bladder	1
Pericardial effusion	1

Outcome:

Died	43
Discharged unimproved	4
Discharged improved	1

Forty-three patients, or 90 per cent., died. Only one patient in this series showed improvement. Retention of urea nitrogen in that case never rose higher than 50 mg. per 100 c.c. and the creatinin was normal. The man was a sailor and has not been heard from since he left the hospital.

These figures demonstrate the importance of distinguishing chemical uremia as an entity in so far as prognosis is concerned. In the retention group, the outlook is practically hopeless. As an index to the severity of the case, the blood chemical analysis is much more trustworthy than the clinical picture.

SUMMARY

This paper represents a study of uremia on the basis of nitrogen retention. Instead of investigating the blood chemical findings in patients clinically considered uremic, the method pursued was to analyze the other evidences exhibited by patients with known nitrogen retention. The syndrome of nitrogen retention (true uremia) differs radically from the various other terminal states occurring in nephritis (the pseudouremias). It is a "pure type," and deserves separate study as such.

Urea nitrogen retention was the criterion upon which this study was based. The clinical records of patients treated at the Long Island College Hospital whose urea nitrogen readings equalled or exceeded 50 mg. per 100 c.c. of blood were analyzed, and the various findings were summarized.

The data obtained were summarized under the headings blood chemistry, etiologic factors, symptomatology, urinary findings, eye signs, cardiovascular changes, complications, and outcome.

The urea nitrogen values appeared to furnish a reliable index to the progress of the case, much more so than the clinical picture. Increases to figures of 300 mg. per 100 c.c. of blood invariably portended early death.

Uric acid readings were quite variable and bore an uncertain relation to the severity of the case. Although there was always some degree of retention, this was often moderate even in comatose, moribund patients with maximal grades of urea and creatinin retention.

Creatinin tended to rise in the same proportion with urea nitrogen. Retention of this substance was found to be of great prognostic value.

The study of the etiologic factors would indicate that heredity, sex, and occupation are not important predisposing causes. All of the patients were Caucasians. Thirty-eight cases, or 79 per cent., occurred between the ages of 20 and 50. Only one instance was noted before the age of 20.

The most important underlying renal condition responsible for uremia was chronic glomerular nephritis, being present in 34 instances (71 per cent). Acute glomerular nephritis was accountable for only two cases. Tonsillitis and scarlatina were the most frequent antecedent infections.

The symptomatology revealed a striking similarity to nephrectomized animals and to instances of total deprivation of renal function in man. Drowsiness, gradually merging into coma, vomiting, headache, dyspnea, edema, restlessness, and increased tendon reflexes ranked highest in frequency. Concurrent cardiac decompensation was undoubtedly responsible for the dyspnea and edema in many instances. Eclamptic evidences were infrequent. Convulsions were observed in only six patients, and then only within an hour of death.

The urine showed abnormal signs in every case except one.

A moderate grade of secondary anemia was observed in the great majority of patients. The average red blood cell count was 3,690,000; the average hemoglobin, 63 per cent.; the average color index, 0.85. The Wassermann reaction was positive in only four out of thirty-six patients.

The evidences revealed by ophthalmoscopy were papillo-edema, albuminuric retinitis, retinal hemorrhages, and vascular degeneration.

Cardiac hypertrophy was positively determined in 27 cases. The average systolic blood pressure was 171; diastolic, 108; pulse pressure, 63.

Myocardial insufficiency and lobar pneumonia were the most important complications.

Forty-three, or 90 per cent. of the patients, died. Only one left the hospital improved.

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BACILLUS ACIDOPHILUS MILK AND ITS THERAPEUTIC EFFECTS

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It is now a well-established fact that diet exercises a most profound influence in determining the predominance of one or another type of bacterial cells vegetating within the enteric tract of both animal and man. If the microbic intestinal flora bears any biologic relationship to health and if the maintenance of this significant phenomenon actually depends upon the diet of the host, then the discovery of such interrelationship should advantageously commence in early infancy, at which time the diet perhaps more nearly approximates the normal than at any other time of life.

We are now fully aware of the fact that under conditions of normal functioning within the alimentary canal, the meconium of the new-born baby is sterile. Several hours post-partum bacterial contamination can be easily demonstrated, particularly by cultural methods. These early invaders probably gain entrance to the intestinal canal through the mouth and anus and the fecal discharges contain a heterogeneous aggregation of bacteria, chiefly resembling those commonly met with in the baby's environment.

As soon as the milk is received into the digestive tract, an appreciable change in the bacterial picture is recognizable. The initial promiscuous and mixed microbic infection gives way to a simplified flora consisting almost entirely of B. acidophilus and B. bifidus. The stools of normal healthy babies are yellowish in color, slightly acid in reaction, soft in consistency and devoid of offensive products of putrefaction. As soon as the artificial feeding becomes more varied, including a higher percentage of starches and proteins, the fecal flora gradually shifts to one of a more complex character, eventually approaching the mixed flora of the average adult. B. coli makes its appearance in large numbers as well as such organisms as B. welchii, B. putrificus, B. proteus, Gram-positive and Gram-negative coccal forms and various other putrefactive types. The increase of these forms naturally leads to a decrease of B. acidophilus. A few acidophilus bacilli can, as a rule, be demonstrated in the stools of adults. Cheplin and Rettger reported that under ordinary conditions of alimentation they may constitute as high as 5 per cent. of the viable bacteria in the stools. In most cases, however, B. acidophilus is completely overshadowed by other intestinal microörganisms and is found only after a prolonged search.

In the adult, the character of the intestinal flora is dependent almost entirely upon the nature of the individual's diet. On the average mixed diet, B. coli, B. welchii, enterococci and allied bacterial forms are invariably found in high predominance. The great majority of adults ingest large, if not excessive, amounts of proteins which lead to establishment within the colon of a highly proteolytic flora. It is in these individuals that we find extensive intestinal putrefaction.

Much of the bulk and weight of the stools of so-called normal adults is made up of living and dead bacteria. Thus MacNeal, Latzer and Kerr showed that the average adult excretes daily 33 trillions of microbes. It is self-evident that this very large number of microörganisms can hardly be contained within the ingested food. Hence, the assumption must be that the alimentary canal is the site of an enormous daily bacterial proliferation. As early as 1868 Senator declared that the decomposition of protein within the digestive tract, under ordinary conditions, results in the formation of substances toxic to the host. Bouchard (1884) elaborated the theory of intestinal intoxication, claiming that the amount of putrefactive products eliminated in the urine was a measure of the degree of intestinal putrefaction and called his measurements "Urotoxic Coefficients." Combe, Herter and others have shown that the fecal flora of the adult is almost always putrefactive, producing distinctly toxic products and considerable amounts of gas in the intestine. The toxicity of some of these products of putrefaction may be easily demonstrated by feeding or injecting them into experimental animals, and, while small doses may not manifest any definite recognizable effect, larger quantities may even produce death of the animal.

For years, the large intestine has been regarded as a most active microbic cesspool, furnishing the etiological factors responsible for many pathological conditions in man. It was the trend of medical thought that in whole or in part, at least, the absorption of bacterially split protein derivatives was causing the premature onset of senile changes in the kidneys, brain, liver, heart and arteries. When Metchnikoff announced his theory of auto-intoxication, calling attention to a definite alleged relation between premature senility and intestinal putrefaction, and proposing to combat these toxicogenic intestinal microbes on their own battlefield by the introduction per os of B. bulgaricus, it was hailed with considerable enthusiasm.

According to Metchnikoff and his followers, the ingestion of B. bulgaricus cultures exerted a beneficial influence by destroying or eliminating harmful intestinal bacteria and thus preventing auto-intoxication. This attractive theory of Metchnikoff spread very rapidly throughout the civilized world and stimulated an ever increasing use of B. bulgaricus. In fact, so general has the use of B. bulgaricus products become that the market is actually flooded with various commercial preparations, in the form of powders, tablets and liquid cultures.

We know now, however, quite definitely that the administration of even large doses of viable B. bulgaricus cultures exerts no transforming influence whatever upon the character of the mixed proteolytic fecal flora. Furthermore, it has been conclusively demonstrated by Cheplin and Rettger in their recent investigations, that B. bulgaricus cannot be acclimatized to the intestinal tract of either animal or man. They strongly emphasized the fact by furnishing experimental evidence that the bacteria in the stool identified by Metchnikoff as B. bulgaricus were in reality Bacillus acidophilus whose growth had been stimulated by the lactose in the sour milk fed to the patients. But Metchnikoff's work has not been in vain. He ushered in a new and important field of study, namely, bacterial implantation within the intestinal tract for therapeutic purposes. His ingenious theory has inspired others to find a means of holding in check the metabolic activities of the pernicious intestinal bacterial army.

Cheplin and Rettger were the first to point out that bacterial implantation within the digestive tube was possible, but could be accomplished only when properly qualified organisms are employed. The bacterium selected for this purpose was B. acidophilus. These investigators have shown definitely that B. acidophilus can be implanted in the intestinal tract almost to the exclusion of all other known bacterial forms; they emphasized the fact that the most effective method of simplifying the intestinal flora is through the use of milk cultures of B. acidophilus, which were employed by them for the first time in 1920. In some instances 500 c.c. of *acidophilus milk* were sufficient to bring about complete simplication of the fecal flora with the suppression of the undesirable putrefiers; the daily ingestion of 1000 c.c. in two to three doses, in practically every case effected the desired change of the flora in the course of four to seven days.

At the start, Cheplin and Rettger conducted their experiments with animals and apparently normal human beings. Their conclusions suggested that the transformation of the fecal flora might possibly be of benefit in certain pathological cases in which there is associated a predominance of the putrefactive forms of bacteria in the enteric tract. Accordingly, they made the first clinical application of the so-called B. acidophilus milk therapy early in 1920, treating over 60 cases. They reported that the oral administration of B. acidophilus milk resulted in relief from chronic constipation, chronic diarrhea and mucous colitis; they also obtained beneficial results in the treatment of eczema referable directly to the bacteriology of the intestinal tract. These claims were since confirmed by Cheplin and Wiseman, Kopeloff and Cheney, Gompertz and Vorhaus, and Bass, who reported the satisfactory treatment of chronic constipation and diarrhea with milk cultures of B. acidophilus reinforced with lactose. Norman and Eggston have given the acidophilus therapy a widespread application and strongly advocate the acidophilization of the intestinal tract by means of milk cultures. More recently Cheplin, Fulmer and Barney, in their studies on the effect of B. acidophilus milk upon a series of cases of chronic constipation and diarrhea, found that the milk cultures exerted a beneficial influence clinically by removing the toxic symptoms and regulating the fecal eliminations from the bowel.

EXPERIMENTAL

The experiments presented in this paper were carried out with the object of extending the observations on the therapeutic value of the oral administration of viable acidophilus milk cultures on a larger group of clinical cases. Our chief aim was to implant B. acidophilus within the alimentary canal of man and, while maintaining it as the dominant intestinal organism, to ascertain what improvements, if any, were manifested clinically. That is to say, we endeavored to establish, if possible, a co-relation between a simplified aciduric flora dominated by B. acidophilus and any changes which might be noted in the clinical picture.

The acidophilus milk was prepared in liter lots in accordance with the method advocated by Cheplin and Rettger and living 24-36 hour cultures were administered daily *to the patients.* With but few exceptions, 1000 c.c. of the milk culture, enriched with 50-100 grams of lactose, were ingested by the subjects each day in three equal doses, 2-3 hours after meals. At no time during the investigation were any special or modified diets prescribed and the milk culture was consumed regularly in addition to the ordinary daily dietary régime. It was definitely arranged that no cathartics or laxatives be taken by any patient throughout the entire experimental period. In the event of no response during 48 consecutive hours, enemata, consisting of 2-3 parts of warm water and one part of acidophilus milk, were employed.

Bacteriological examinations of the stools were made of every patient before treatment and then at intervals of from one to three weeks. These routine fecal examinations were carried out with the chief object of determining the progress in the transformation of the intestinal flora from the ordinary mixed type to one dominated by B. acidophilus.

REPORT OF CASES

CASE 1. A man, 48, married, superintendent of schools, consulted one of us November 4, 1922; miserable in mind, depressed and despondent. His symptoms at present are those of pronounced psychasthenia. There has been for many years a "burning" ache in the lumbar, sacral and lower abdomen regions and a feeling of general abdominal distention. He has described it as a "dirty, nasty, uncomfortable, hot, burning sensation all through the abdomen from the waist down." Is often wakeful during part of the night on account of these symptoms. Often there are blurring sensations through the eyes, vertigo, headache, and bilious attacks. Bowel movements loose and offensive. He never feels that the bowels have satisfactorily moved. He has a desire to go frequently, but very little passes. They are not formed on account of enemas. For six months has been impotent. Comes home from his work and goes to his room and cries, due to mental depression. In the past has consulted many able physicians. Recently has been under the care of chiropractors and osteopaths. Four years ago consulted a well-known rectal specialist, who advised bowel irrigation and the free use of water. Accordingly, he has subsequently had daily bowel irrigation of two quarts of water and has drunk ten glasses of water daily. About this time a complete examination of the gastrointestinal tract was made, and no abnormalities were found except a spasticity of the lower part of the descending colon and the upper part of the sigmoid. At this time the stools were knotty in character and at times there was mucus; at times they were liquid. Movements were daily usually. Had feeling of pressure and fulness in the lower right quadrant of the abdomen and stomach with no relationship to food.

In the fall of 1922, he was given an intensive treatment of acidophilus milk. One liter of the milk culture reinforced with 100 gms. of lactose, was consumed daily in three doses. The results were most striking in restoring his bowel activity. Immediately following the use of acidophilus milk he gave up bowel irrigations and has had daily normal movements without resorting to catharsis. Bowel movements were less offensive. His abdominal discomfort and burning backache, which at first was not materially influenced, began to improve after he had been on the milk for about ten weeks. The milk treatment was continued from about November 15 to March 15, when the milk was replaced by two tablespoonfuls of milk sugar after each meal. From March 15 until the present time, May 11, he has felt the best that he has in ten years over so long a period of time. He has not been despondent at all, he tires but little and he has no gastric or abdominal discomfort. At times there is backache, but not so severe as to interfere with his work. For the most part he has slept well; there has been almost daily bowel evacuation, except at rare intervals, when the day previously they have moved more freely than usual. The stool has been soft with slight odor. Beginning with the eleventh week after discontinuing the acidophilus treatment he had a slight attack of blindness followed by an attack, with looseness of the bowels and pain through the abdomen, such as he had been accustomed to have formerly, but not so severe in type nor over so long a duration. He states that he is quite satisfied that the milk treatment is responsible for his greatly improved clinical condition, inasmuch as he has taken no other treatment, nor changed his mode of living. His toxic symptoms largely disappeared and he resumed his daily duties with, as he repeatedly stated in person, new strength and endurance.

Case 2. A woman, widow, aged 63. For several years she has been bothered with a rumbling of gas in the intestines, with a feeling of abdominal distention and offensive flatus and a general pruritus. Stool examination at this time showed a predominance of B. coli, B. welchii and enterococci, the latter to the extent of 22 per cent.

With the idea of improving the above condition, acidophilus milk was advised, which the patient began to take on January 8, 1923. The treatment consisted of the oral administration of one liter of acidophilus milk, enriched with 50 gms. of lactose, daily, and extended over a period of 18 weeks. For a few days after taking the milk culture the intestinal discomfort was increased. By the end of the third week, when the fecal examination revealed the predominance of B. acidophilus to the extent of 82 per cent., improvement took place, and when seen April 23, intestinal discomfort, gas and pruritus were entirely relieved. On first examination, December 14, 1922, there was a slight cardiac irregularity of the alternating type which was not noted subsequently.

Case 3. A woman, aged 50, married, consulted one of us February, 1921, on account of mucous colitis. Twenty years previous had typhoid fever. For about seven years there had been a looseness of the bowels and the passing of mucus. Frequently there was epigastric or general abdominal pain of cramp-like character, followed, in five or six hours, by two to four loose bowel movements with always more or less mucus. At times the stools were composed entirely of mucus. There would be intervals of four or five days during which the bowels were not loose. When the colitis first developed, the stools were examined and undigested meat fibers were found, and she has subsequently lived on a meat-free diet and food consisting largely of starch and milk. Three years ago gastric analysis showed total acidity of 51 and free HCl 25. Complete barium series of the gastric tract failed to reveal any abnormality except ptosis. When first seen in 1921 gastric analysis showed a total acidity of 65 and free HCl 19. Again barium series showed no abnormality except ptosis. At this time a rectal examination showed engorgement of the blood vessels of the rectum, which bled easily. Microscopical examination of the stools, negative, except for large amounts of mucus. Astringent rectal and colonic irrigations used. At times solutions of sea salt were used and a more liberal diet, including meats, were given. Bismuth subgallate and other astringents of similar nature were used with slight improvement. In June, 1922, the patient developed acute appendicitis and was operated, with the removal of an enlarged, engorged, inflamed appendix. Hope was entertained that the removal of her appendix would have beneficial influence upon the colitis. In this we were disappointed as the mucous colitis continued regardless of energetic treatment.

On September 11, 1922, the acidophilus milk treatment was prescribed and was taken for a period of eight weeks. The improvement was immediate. After completely transforming the fecal flora at the end of the fourth week, the stools were formed, and relief from abdominal pain, bloating, and disappearance of the mucus were noted. Her general condition improved, she felt stronger and more energetic. Following the use of acidophilus milk she was given lactose—one heaping tablespoonful three times a day —which was continued up to December 1, 1922. At this time the lactose was discontinued, which resulted in a return of the looseness of her bowels, although not to the extent as before receiving acidophilus milk. When not under treatment with either acidophilus milk or lactose, there will at times be looseness of the bowels, but this occurs more rarely and not to the same extent as prior to the B. acidophilus milk treatment.

Case 4. A woman, single, aged 41, has been under observation since December, 1919. At this time she gave a history of having had gastro-intestinal trouble over a period of many years. She frequently suffered attacks of indigestion. Vomiting occurred frequently, generally after eating. The vomitus often contained mucus in large amounts. Often large strings of mucus were passed per rectum. The appendix was removed in 1913. The stomach and gallbladder were found free from gross pathology at this time. When first seen, in December, 1919, she complained of frequent attacks of indigestion, often vomiting of partially digested food, which frequently contained mucus; also of constipation and the frequent passing of mucus with her stools. Various cathartics had been resorted to for the relief of constipation. However, she depended mostly upon the use of enemas. At this time there was a moderate degree of secondary anemia. Gastric analysis showed mucus in large quantities with absence of free HCl. Rectal examination showed redness of mucous membrane, which bled readily. Mucus was present in the lower sigmoid. X-ray examination revealed a moderate degree of stasis in the large bowel with general visceroptosis. A carefully regulated diet, frequent stomach lavage, and the use of dilute HCl was followed by slight improvement. At times gastric analysis showed free HCl in small amounts, but more often it was absent. Her symptoms were always aggravated by fatigue.

In August, 1922, the patient was put on the acidophilus milk culture. The treatment consisted of daily ingestion of one liter of acidophilus milk, with 100 gms. of lactose, and continued for a period of three weeks. The subject responded very readily to this treatment, which resulted in producing a freer bowel movement and with less gas and no pain from straining at the stool. At the end of the short experimental period, due to the patient's departure from the city, three heaping tablespoonfuls of lactose, taken daily, were substituted in place of the milk culture. A free bowel action continued to prevail by the use of lactose. However, complete relief of the underlying conditions was not secured. In spite of the short duration of the treatment partial relief from constipation and disappearance of mucus were noted.

Case 5. A man, aged 48, had digestive disturbances of various kinds since age of 13. Frequent vomiting attacks, and has been very constipated for years. At one time he was told he had a dilated stomach and learned to do gastric lavage himself. When examined September, 1921, he complained chiefly of poor appetite, bad taste in the mouth, and obstinate constipation. He was depressed, had no ambition and lacked strength. There were frequent headaches and he was nervous and easily excited. On examination there were diseased tonsils and evidences of arteriosclerosis as shown by thickened radials and definite enlargement of the aorta as revealed by x-ray. The latter also showed well-marked ptosis of stomach and transverse colon. Prostate badly affected, and upon massage a large amount of purulent secretion could be expressed.

The acidophilus milk treatment, consisting of one liter of the culture and 100 gms. of lactose, commenced June 7, 1922. By the end of the fourth week definite improvement in his condition took place. The fecal examination at this time showed B. acidophilus to have reached 78 per cent. of the total intestinal flora. Unfortunately the treatment was interrupted by tonsillectomy, done October 23. After recovering from the operation, the improvement continued. The treatment was resumed on November 8, and discontinued December 16. He has gained two pounds in weight, his appetite has increased, the bad taste in the mouth has disappeared, and his tongue, which was formerly coated with a thick white fur, has nearly cleared, although some coating persists at the base. His constipation is relieved, and save for an occasional day, his bowels move every twenty-four hours without cathartics. There is marked gain in strength and mental state has changed markedly. He now shows a tendency to joke and is definitely more cheerful. The headaches have disappeared.

Case 6. A woman, aged 59, milliner, has been under observation for seven years because of hypertensive cardiovascular disease. Blood pressure, 180 systolic, 100 diastolic. During the last two years she has developed a chronic arthritis of the arthritis deformans type. The eye grounds show degenerative changes in the retina and the heart shows a mitral systolic murmur. Several infected teeth were removed, and tonsils were taken out in January, 1921. The chief complaint is lack of strength. At times barely able to drag herself to and from her business. During the last few years she has had to take several rest cures in bed, some of them lasting for many weeks because of her marked asthenia. She has a bad taste in her mouth, tongue coated at intervals, then clears without obvious reason. There is marked constipation requiring habitual use of cathartics.

The treatment of acidophilus milk, enriched with, on the average, of 125 gms. of lactose, started August 1 and continued for five months. During that time there was a very decided improvement in the patient's general condition. She gained sixteen pounds in weight. Color, which had been sallow, cleared. Cheeks were pink. Appetite became excellent, and the most notable change was the marked improvement in strength. There seemed to be less swelling and tenderness of the joints, and the bowels, save for an occasional occurrence, moved daily without any cathartic. There was no change in blood pressure or other signs associated with the cardiovascular disease. After stopping the treatment for two months there was an apparent return to her original condition. She became weaker and began to suffer with digestive disturbances again. The milk culture was again started March 1. Relief from constipation, headache and dizziness was noted. There has been no definite change, however, in the other accompanying disturbances.

Case 7.—A man, aged 32, motorman, has good color and looks perfectly well, but complains of an alternation of constipation and diarrhea, of five years' duration. There is a great deal of gas in the intestines and food does not seem to digest. After eating there is pain across the bowels below the umbilicus, lasting for two or three hours. If the bowels move properly he has no pain and is obliged to take cathartics daily. Pain is not relieved by food. X-ray of gastro-intestinal tract and thorax revealed no abnormality.

After taking one liter of acidophilus milk and 100 gms. lactose for seven weeks, he gained six pounds and felt entirely relieved. Not much gas passed from bowels. He had from one to two stools daily, yellow, nearly odorless, without a cathartic. He had no diarrhea, indigestion or abdominal pain. Appetite good and sleep much improved. Strength was also increased.

Case 8. A man, aged 30 years, machinist. Case of marked oral sepsis. Constipation. Since 1919 has had attacks of abdominal pain, which have come on suddenly. Bowels formerly regular, but are now constipated. Cathartics make him feel ill and do not give proper movements. Has to go to the toilet from six to twelve times a day, passing only small quantities at a time. Lower abdomen feels hollow. He has to bend over and hold himself. At intervals constipation alternates with attacks of diarrhea. Has lost 20 pounds. X-ray of gastro-intestinal tract practically negative. Teeth show six root abscesses. Patient was very sallow and looked toxic. Teeth were put in good condition, after which he improved very much.

After the patient had consumed one liter of acidophilus milk and 100 gms. of lactose daily a marked improvement was noted. Gained 13½ pounds. Had from one to four large stools daily without cathartic and was rarely constipated. He tires less easily and feels definitely improved. Bacteriologic examination of the stools revealed B. acidophilus as the predominating organism. Vertigo and other toxic symptoms disappeared. Patient under treatment fourteen weeks.

Case 9. A man, aged 41, has suffered with constipation and digestive disturbances since a child. At eighteen years of age he began to have attacks of diarrhea at irregular intervals. These would frequently follow a full meal and would be accompanied by considerable griping. After one or two very loose stools he was usually rather used up and depressed for the rest of the day. About three years ago an anal ulcer was discovered, and the excision of this with the stretching of the sphincter gave considerable relief, but after about a year had elapsed the diarrhea returned. The bowels could be kept open by the use of liquid petroleum, but this had to be taken constantly, as he was constipated between the attacks of diarrhea.

The treatment of acidophilus milk and added lactose in amounts ranging from 25 to 75 gms., started June, 1922. At first a great deal of intestinal gas was noted, and this caused much annoyance. After the first two or three months very little improvement in his condition was noted, save that the bowels moved without any other cathartic. In fact, the amount of lactose had to be carefully regulated, because if taken in large amounts, it produced a well-marked diarrhea. Gradually the digestive symptoms disappeared, together with the attacks of diarrhea. There is now a daily movement of the bowels without a cathartic, and there seems to be a complete freedom from all symptoms on the part of the gastro-intestinal tract.

EVALUATION OF RESULTS

Subject to the limitations of the results obtained in this investigation, there is sufficient evidence to invite the belief that B. acidophilus milk possesses therapeutic properties in the treatment of the intestinal conditions mentioned in this paper. That B. acidophilus can be successfully implanted in the human intestine is indisputable, as is also the fact that its colonization there as the predominating organism can be maintained as long as the oral administration of the milk culture in proper amounts continues.

B. acidophilus is an organism which at no time during its metabolic activities produces gases, toxins, or other harmful substances. Its therapeutic virtue lies, not only in its ability to suppress B. coli, as recently claimed by Gompertz and Vorhaus, but also to its inhibiting effect upon the enterococci, B. welchii, B. proteus, B. putrificus, and other undesirable toxicogenic intestinal microbes. As an acidophilic flora is incompatible with either a fermentative or proteolytic type of flora, it has been repeatedly pointed out that in the majority of adults, B. acidophilus is suppressed or almost entirely annihilated by other bacterial forms. This is particularly true in cases of chronic constipation and mucous colitis. Indeed, that offers a strong argument for the reimplantation of B. acidophilus and the establishment of a fecal flora akin to that of the infant. We believe that the transformation of the intestinal flora, by means of acidophilus milk, minimizes auto-intoxication and is indicated in the so-called toxic intestinal conditions.

The acidophilus milk exerts a beneficial influence upon constipation by regulating the bowel movements, while in diarrheas and mucous colitis its effects are manifested by a gradual restoration of formed passages and disappearance of mucus. Coincident with these regulatory phenomena there appears relief from toxic symptoms which previously existed. This bears a definite and constant relationship to the change in the fecal flora.

Unquestionably, individuals will vary greatly and exhibit many idiosyncrasies in their responsiveness to the B. acidophilus milk treatment. In this investigation we have encountered several instances of patients experiencing a return to the former constipated condition, although not to the same degree, when the milk culture was discontinued. The complexity of the factors involved which govern the clinical picture of any individual makes it extremely difficult to generalize on the benefits of any single mode of treatment. The fact, however, remains that during the course of these studies no patient, no matter how constipated, has failed to manifest some relief from constipation and clinical symptoms, following an intensive course of treatment with B. acidophilus milk and lactose. We believe that the acidophilization of the enteric tract is highly desirable. Viewed from this standpoint, the range of usefulness of B. acidophilus milk seems quite clearly defined.

However, we deem it wise to recall the fate of B. bulgaricus and sound a word of warning and caution at this time. The fundamental principles on which the acidophilus milk therapy is based have been clearly set forth in various publications and should be strictly adhered to if favorable results are expected. The acidophilus milk therapy is not a cure for all kinds of ailments, nor will all cases of gastro-intestinal disturbances necessarily respond to this mode of treatment. It is not an elixir nor a so-called "longevity bug" in the sense that B. bulgaricus was hailed. The ingestion of relatively few acidophilus bacilli will not lead to implantation and bodily improvement. A minimum amount of the culture, containing on the average 50 billions of viable organisms, should be administered each day for at least six weeks or longer to effect clinical improvement. Acidophilus tablets can be of no use whatever in bringing about transformation of the flora and relief from trouble. Bass has shown the impracticability of commercial tablets and capsules. He estimates that it requires twenty tons of tablets or capsules to contain as many viable bacteria as are present in one liter of the acidophilus milk culture. Our own bacteriological tests and mathematical calculations fully confirm those of Bass. It is for such reasons that we strongly advocate the adoption of the B. acidophilus milk culture as the surest and most effective means of attaining the desired results. Unless we carefully heed this warning relative to the definitely established quantitative relationship, the acidophilus milk therapy will eventually be discredited and fall into ill repute, and ere long Bacillus acidophilus may occupy a place similar to that assigned to B. bulgaricus today in the armamentarium of the medical man.

We suggest that B. acidophilus therapy be given a fair trial in the intestinal conditions outlined above. No definite claims are made that a cure-all has been discovered, but we feel reasonably certain that we have at hand a therapeutic agent which merits further investigation.

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THE SURGICAL IMPORTANCE OF TORSION DEFORMITIES.*

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When considering the subject of surgery, we almost unconsciously divide the subject into two main sub-topics, *i.e.*, operative and non-operative. The same things occur in reference to the question of skeletal alignment. One phase deals with the non-operative side—that is the subject of faulty posture and the various considerations of it—and the other with the operative side, and the details of corrections of skeletal faults by actual reconstruction instrumentally.

I have been moved to write on this matter because of several experiences recently which showed very plainly that certain faults in skeletal alignment had not been recognized. In the past six months several patients have presented themselves to us for examination and treatment who had previously been operated and showed partial or total failure in obtaining the permanent results which should have been attained, had these faults in alignment been given proper consideration.

Rotary deformations in the long axis of bones are extremely common, but have not received the attention they should have had from the general surgeon, and many orthopaedic surgeons even fail to recognize them. Consideration of lateral and antero-posterior deformations, either curved or angular, are classically dwelt on in surgical and orthopaedic texts, but only a very occasional or casual reference is made to torsion deformities. It is not to be wondered at then that this condition so frequently remains unrecognized.

The cause of these rotary deformities is in some cases congenital, but in most cases is due to (1) unbalanced muscle pulls, especially between those muscle groups whose actions are rotary; to (2) faulty postures during growing years, producing static changes in the bones; and to (3) similar changes induced by faulty stress in interaction with an adjacent deformed bone or part.

As illustrations of these various types I will mention the torsion in the long axis of the femur in connection with the congenital dislocation of the hip, as pointed out by Dr. Russell Hibbs of New York; also the twisting and bowing of the ulna frequently seen to develop both in poliomyelitis and cerebral palsy where pronation is the position maintained; the rotation in the tibia and femur due to faulty sitting posture assumed by many children (especially paralytics) when sitting on the floor; and the torsion of the tibia incident to the faulty thrust on the ankle joint in clubfeet, and in some cases of flat feet where the out toe position in walking during the growing years is habitual.

In this short paper I cannot deal with the subject exhaustively so I shall mention briefly the bones which are often affected and then discuss the more common ones.

During the past five years we have found both in private practice and in the Orthopaedic Hospital-School Clinic, that the tibial twists are the most common. Torsions in the femur, either alone or in connection with the deformity in the tibia and foot, come next. Twists in the arm bones are frequent in connection with paralytic muscle faults, but because of the wide range of movement at the shoulder are fairly well compensated and disturbances of function are not so evident. Torsion with bowing, however, in the ulna and radius, especially the latter, does seriously impede or preclude normal movements of pronation and supination because of blocking at the wrist.

The rolling outward of the metatarsal bones in clubfoot is another instance due to the fact that the plantar muscles pull straight back, while the bases of the metatarsals deviate outward. Consequently, the anterior ends are not only depressed but rolled outward. Twists in the irregular bones of the feet, chiefly the os calcis and astragalus, occur commonly in varus positions. These changes have been described by Hoke of Atlanta, but their surgical significance is not widely enough appreciated.

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*Read before the Los Angeles Orthopaedic Club, March 15, 1921.

Twisting with bending in various ways is found occasionally in the bones of the os innominatum, and also in the processes of the scapulae.

Rotation deformity in the spinal column as a whole has long been recognized as the most difficult phase of scoliosis correction. Static strain and unequal muscle pulls are causative factors, the deformity occurring more easily because the column is made up of units instead of being one long bone. The mechanism, however, is similar in causing such deformity in either. Fixation in the position of deformity is maintained not only by the malformation in the individual vertebrae, but also by the shortened and contracted short muscles of the column such as the multifidius and rotatores spinae. We have found in treating scoliosis with marked structural changes, that the best procedure seems to be correction by the Abbott method with certain modifications, and then arthrodesis of the acute portion of the curves by Hibbs' method. In this method all the posterior muscular and ligamentous attachments are separated and this destroys much of the faulty twist due to these short muscles. In consequence from twenty-five to forty per cent. further correction of the rotation is accomplished.

Faulty function of the feet and legs is the most important consideration surgically because the misdirection of the downward thrust from weight bearing and the wrong direction of the stresses of activity are causes of deformity, and of the resultant overload on the muscles of balance and locomotion. The functional end-result of all operative procedures on the feet and legs is greatly modified, therefore, by taking into consideration these misdirected thrusts in planning the operations involved in treating deformity, disease or fractures. Dr. Russell Hibbs has pointed out the fact that failure to see and correct twists in the femur after the reduction of congenital hip dislocation spells failure in the maintenance of the reduction, with redislocation as soon as the leg is brought down to the walking position. This is well illustrated by a recent case which came to us—that of a young lady of eighteen years with a dislocated hip that had been reduced when she was three years old. Subsequently it had become re-dislocated because the torsion deformity of the femur had not been considered.

In torsion of the femur the trochanter will be felt too far back when the knee is in the sagittal plane, and in any surgical operation on the femur for a reconstructive purpose; in the reduction of fractures by either open or closed method; and in osteotomies for realignment, the lower fragment must be rotated out to match the degree of outward rotation of the upper fragment. The necessary long fixation, however, may tend to induce a permanent outward rotation of the whole leg which would be detrimental and cause considerable knee and foot strain. Hoke's method of making a temporary check to outward rotation of the upper fragment by suturing the trochanteric fascia to the anterior lip of the incision through the fascia lata before doing an osteotomy below, has obviated this danger.

The rotation in the tibia, which is usually outward, causing the axis of the ankle-joint motion to be out of line with that of knee-joint movement, is very common and is found in many conditions, notably: in flatfoot; in paralytic conditions of both types, and in clubfoot cases where the anxiety to correct the toe drop has misled the surgeon into forcing the correction upward before correcting the varus part of the deformity; also where the bent knee position has not been used to counteract the outward rotation thrust incident to the varus correction—a position, by the way, which should be used in correcting most foot and leg deviations. More detail in reference to tibial twists will be found in a previous article by the author entitled "Rotation Deformities," which was printed in the BOSTON MEDICAL AND SURGICAL JOURNAL for May 22nd, 1919.

Before doing any operation of a reconstructive nature on the foot or leg, be sure to ascertain the relation of the ankle, knee and hip joints to one another. If there is an overload on the leg muscles in an ordinary case of flatfoot with, for example, forty degrees of outward rotation of the antero-posterior axis of the ankle joint, what must you expect it to be in a deformed foot which has to have tendon transplantations, bone plastic operations, or other weakening procedures? The strain on muscles and the deforming thrust on the foot will occur or continue even inside the very best leg brace, because the internal skeletal alignment is wrong and the architecture and action of the bones is changed. How, then, can one expect to obtain even an approach to normal function if another architectural change is not made to restore the alignment of joints and bones?

Let me cite a few examples:—

Mrs. S., aged 35 years. Diagnosis: Paralytic equino varus. Duration: Since early childhood. Paralysis of one leg and foot below the knee—no muscle present except moderate activity in achilles. A few years ago a general surgeon split the achilles and brought the outer half forward and inserted it into the outer border of the foot. The woman weighed one hundred and eighty-five pounds, had torsion deformity of the tibia of fifty degrees, the outer border of the foot elongated, torsion of the os calcis and astragalus with the thrust from the leg into varus and the resistance thrust from the ground outward and backward. Was it any wonder that the operation was a functional failure? The tendon stretched out in a few months because it couldn't even support the tipping foot, much less have any abduction function, which was impossible because of the shape of the bones.

Case 2. Child, aged 5 years. Diagnosis: Double dangle legs from poliomyelitis. Came to us recently having had an astragalectomy on both feet by a supposedly qualified orthopaedic surgeon. Result, a failure. Examination showed the feet relapsing into varus. The fibulae instead of resting securely on the cuboids were one and a half inches back of that point, resting far back on the os calcis, and the tibiae rotated outward thirty or forty degrees.

This operation was devised by Whitman as a plastic procedure for eliminating the lateral wobbliness in the paralytic foot, and still allow some antero-posterior movement. It is essentially a stabilizing procedure and when properly done allows a foot with little or no muscle to bear the body weight without deformity.

This case may have been correctly done as far as the operative technic was concerned, but was placed in brace with the shoes set straight forward in the sagittal plane, and a pelvic band which made compensatory rotation in the hip joint impossible. Consequently, with the foot held fixed in the shoe, the rotary thrust through the twisted tibia shortly displaced the articulation and caused a complete failure. The procedure should have been an osteotomy (preferably subperiosteal) of the tibia, followed in five or six weeks by reposition of the foot, or *vice versa*. It matters little which procedure is done first as long as the proper relation of the foot to the leg is obtained. For other reasons we prefer to do the tibial corrections first.

Case 3. Walter W., boy, aged 14 years. Astragalus had been removed several years ago by a general surgeon for disease, presumably T. B. Came to us because of pain in foot after walking. Examination showed faulty foot and leg alignment—ankle joint mortise directed forty-five degrees away from the line of the knee thrust. Careful observation demonstrated no flare up of the old process and x-rays showed only the bad position of the foot in relation to mortise of the ankle. The operative procedures used were correction of tibial distortion and five weeks later a reposition of the foot.

Case 4. J. A., boy, aged 12 years. Diagnosis: Double congenital clubfeet. He was operated upon when three or four years of age by a surgeon who was said to have removed some bone from the outside of the foot. Examination showed scars which seemed to indicate an osteotomy of the lower border of the foot, and there was also a scar over the achilles tendon. Position of the feet bad—both relapsed into extreme varus—weight being borne on outer borders of the feet entirely—soles not touching the ground—ankle joint axis sixty degrees outward from the antero-posterior line of knee thrust—previous operative results were nil. Treatment: Reconstructed by doing subperiosteal tibial torsion osteotomies and subsequent tarsal osteotomies of astragalus, os calcis and cuboids.

Case 5. Edw. A., aged 5 years. Diagnosis: Double congenital clubfeet. As a baby had clubfeet corrected, but lately seemed to be relapsing rapidly. Examination showed forty degrees of outward rotation of femora, with twenty degrees of knock-knee and fifty-five degrees of outward rotation of the tibiae. Feet in mild varus when walking with slight pigeon toe. Knee action was directed outward instead of forward. Relapse was due to the fact that the surgeon failed to recognize the torsion strain and malalignment, and discharged the case without proper follow-up supervision.

A clubfoot case should be seen at least twice a year for several years before being discharged, as a certain amount of rotation is apt to develop, even under the most careful handling.

This case required osteotomies of femora, tibiae and tarsus, before satisfactory function could be established.

Case 6. L. H., aged 18 years. Diagnosis: Total dangle leg with bad angular and torsion deformities. I am mentioning this case as an illustration of how such deformities occur. For years this boy carried this paralyzed leg by placing his foot toe down in the crotch of his crutch. He came to us with a right angle flexion deformity at the hip, forty-five degrees of knock-knee, about thirty degrees of inward rotation of the femur, outward and backward luxation of the leg at the knee, ankle joint rotated eighty degrees outward from sagittal plane, and marked equino varus deformation of the foot with characteristic architectural changes.

To estimate the amount of torsion of the femur, rotate the leg until the trochanter assumes a position about symmetrical with the good side properly placed, and note the approximate number of degrees of deviation of the centre of the patella away from the sagittal plane. Then have radiographs taken of the femur showing the upper end—one view with the knee in the sagittal plane, and another with the knee rotated in or out to bring the neck and trochanters in about the normal plane.

To estimate the tibial deviation compare the mid line of the foot or antero-posterior axis of the ankle-joint mortise with the axis of motion of the knee joint. Radiographs taken of the lower end of the leg, one with knee in sagittal plane and another with the ankle joint in the same plane, will evidence the discrepancy.

We have preferred subperiosteal osteotomy as recommended by Hoke, and find it most satisfactory. With a little care and team work and the use of Esmarch's bandage, only five to ten minutes is required for a child's tibia, and ten to fifteen minutes for a femur—only twenty to thirty minutes in all, including anaesthetic and application of plaster dressing.

These short steps with clean technic are not a tax on an average child, and even three or four can be done in the course of a few months without difficulty. A very marked improvement in function, and in many cases a surprising return of muscles which had been inactive for years, is evidence that there is muscle stretching and weakening from this type of deformity; and the realignment of muscle pull is as important as that of bony structure.

In conclusion, let me state that if we always think skeletally in three planes, these rotatory deformations will not escape our attention and, once recognized, the importance of their effect on the functional results of our surgery should be realized. The results of our reconstructive surgery, particularly of the feet and legs, will be immeasurably improved by the correction or prevention of such deformities.

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HEALTH FOR THE PEOPLE OF BOSTON

BY MARY BEARD, R.N., BOSTON

THE New York Evening *Post* of May 17 published a leading article called "Selling Health to 112,000 People." It deals with an effective experiment or demonstration which is going on in East Harlem and calls to the attention of New Yorkers the value of community health work of this type. To us, who are closely tied up with this kind of work in Boston, it often seems that not only is the general public very ignorant of its extent and its aims, but that even amongst those who read this Journal regularly there is very little understanding of the plans laid down for the community health work in Boston.

For this reason the following outline is submitted. The first point of departure is that all Boston health agencies, whether public or private in control, are working together in and through an incorporated organization known as the Boston Health League, of which our Commissioner of Health, Dr. Francis X. Mahoney is President, and Mr. Horace Morison, Executive Secretary; Vice-President, Rev. George P. O'Conor, Catholic Charitable Bureau; Treasurer, Dr. Richard Wadsworth; Secretary, Dr. Merrill Champion, State Department of Public Health. The chairman of the Executive Committee, Dr. George Cheever Shattuck, is also chairman of the Medical Advisory Committee to the Commissioner of Health.

The other agencies represented on this Executive Committee of the Boston Health League are:

Boston Public Schools (health of the children), Dr. William H. Devine.

Boston Sanatorium Trustees, Dr. John F. O'Brien.

Boston Metropolitan Chapter, American Red Cross, Department of Health Service, Mr. Henry Copley Greene.

New England Division, American Red Cross, Miss Katherine McMahon.

Boston Tuberculosis Association, Miss Bernice Billings.

Maverick Dispensary, Miss Neva Dewar.

Forsyth Dental Infirmary, Dr. Harold DeW. Cross.

Community Health Association, Miss Mary Beard.

Members not representing any organization, Mrs. Milton J. Rosenau, Dr. Robert B. Osgood.

The purpose of the Boston Health League, in its own words, is: "To procure the greatest possible efficiency and economy in the development and dispatch of public health work and the maximum of service through the close coöperation and coördination of the work of the existing public health agencies in the city of Boston."

Up to the present it has been financed from funds secured by an appropriation from the Metropolitan Chapter, American Red Cross, of Boston. At a recent meeting of the Executive Committee of the Health League, it was unanimously voted that the budget to maintain it (the budget which has been submitted is $8500) for the coming year would be raised by the League, which, in the opinion of all concerned in its work, Boston cannot afford to do without.

One of the constitutent agencies composing the League is the Community Health Association of Boston. This is a privately controlled organization combining the work of the old established Instructive District Nursing Association and of the Baby Hygiene Association, one 37 and one 14 years old.

Before the amalgamation, which took place last October, there were five separate groups of public health nurses in Boston, each under a distinct board of control, and having no official relation to one another. The two at the end of the list are now united under one management.

School nurses under the School Committee—51.

Tuberculosis nurses under special committee appointed by the Mayor—34.

Municipal nurses under the Commissioner of Health—28.

Baby Hygiene Association nurses under private board—30.

Instructive District Nursing Association nurses under private board—136.

There are 238 salaried workers of various kinds, and over 300 committee members actively engaged in the work of the Association. It is costing $960 a day. After accounting for the payments from patients and from the Metropolitan Life Insurance Company, the Community Health Association must raise $153,010 this year to complete its program. A certain part of this sum will come from income earned by endowed funds. The estimate covers a period from May 31, 1923, to December 31, 1923, and is based on actual income and expenditure for the first five months of the year 1923.

There are 15 administrative centers throughout the city. There is also a Central House, in which are the permanent records of the Association, offices of the various divisions of the work, and the School for Public Health Nursing, jointly directed by Simmons College and the Community Health Association. Here are also committee rooms for the many meetings necessary to conduct its work.

There are 12 health services, all but one of which are given in the homes and for certain of them special supervisors have been appointed:

	Division of	
1.	Vital Statistics	Director
2.	Medicine	Director
3.	Nursing and Field Work	Director
4.	Finance	No Director
5.	Child Hygiene	Director
6.	Nutrition	Director
7.	Mental Hygiene	No Director
8.	House and Station Headquarters	House Mother

There are 12 health services all but one of which are given in the homes and for certain of them special supervisors have been appointed:

1.	Bedside nursing and health teaching	
2.	Prenatal	Field Supervisor
3.	Care at confinement	
4.	Postpartum	
5.	Well baby	
6.	Pre-school	
7.	Orthopedic (including after-care of poliomyelitis, chronic cases and posture work) Field Supervisor.	
8.	Nutrition	
9.	Mental Hygiene	
10.	Care of communicable diseases, excepting scarlet fever and diphtheria	
11.	Industrial nursing	
12.	Dental care	

To insure proper guidance from the medical profession, the following committee has been appointed:

Dr. Richard M. Smith, Chairman; Dr. Maynard Ladd, Pediatrics.

Dr. Robert D. Curtis, Secretary.

Dr. Robert L. DeNormandie, Dr. Stephen Rushmore, Obstetrics.

Dr. Robert Osgood, Dr. Smith-Petersen, Orthopedics.

Dr. C. Macfie Campbell, Dr. Douglas A. Thom, Mental Hygiene.

Dr. Alice Hamilton, Dr. Wade Wright, Health in Industry.

Dr. George C. Shattuck, Dr. Gerardo M. Balboni, General Medicine.

The nurses of the Community Health Association work with any private doctor in Boston, who may ask for their help with the families under his care. There are more than 600 doctors who do so. The nurses also work closely with the out-patient departments of all the hospitals. They send many a patient to see his doctor before he has become too ill to go.

To produce health in an individual, a family, or a community, we must first of all eliminate sickness. Sickness may spread to others, and the anxiety and fatigue incident upon it may cause lowered resistance in that member of the family caring for the sick person. This may result in illness and will certainly lower the standards of health maintained in the family under normal conditions.

The Board of the Community Health Association has adopted the following policy: "Each nurse shall perform as many types of nursing service in a home as are practical without impairing the efficiency of the work; experts in special subjects are necessary and shall be employed to carry out this policy."

It is planned to adapt this policy to the work at present under way, gradually and not immediately, throughout the city.

It requires a fine type of woman and special preparation and experience to make a successful public health nurse. Skill is needed to teach effectively the laws of health, correct defects which may result in serious illness later in life and to teach a mother how to keep in good condition before her baby is born.

In a recent paper by Dr. Louis I. Dublin, read before the Harvey Society, at the Academy of Medicine, New York, there appears an interesting analysis of public health aims for the immediate future. Preventive medicine, he shows, may reasonably hope to increase, during the next 20 or 30 years, the "expectation of life," by 10 years. The expectation of life at birth will be nearly 65 years instead of 55, which was the expectation of life in the United States Registration area in 1920. Since 15 per cent. of all deaths are among children under one year of age and since the death of an infant erases all of the many years of expectation of life for that individual, instead of only the remaining few for those past middle life, the reduction of the infant mortality rate is the most important point of attack in public health work. In one month we had on our records 12,600 infants, young children or maternity cases. Therefore the opportunities of the Community Health Association to take a leading part in the most progressive of movements for the health of our nation are very great. The Community Health Association has an opportunity to lead in work with mothers and babies, for we have developed pre-natal, post-natal and well-baby services unusually far. Dr. Dublin draws attention to the knowledge that if only two diseases, albuminuria and syphilis, could be detected and treated during pregnancy, then infant mortality in the first two weeks of life could be cut in half. The United States Life Table shows in 1910 about three times as great a mortality for the preschool child as we may reasonably hope to attain, for the communicable diseases of childhood may be controlled far beyond present accomplishment.

An unfortunate habit of comparing figures relating to the health work of a given agency, with figures showing the rates of the city as a whole has, in recent years, become rather a general form of advertising among private agencies in many cities,—Boston as well as others. Such comparisons may bring money to the treasury of the private agency (a greatly to be desired end, surely), but they should never be made, we believe, because the figures are not, properly speaking, comparable. Conditions among the groups of people compared differ widely and the results often quoted convey false impressions. What is truly significant is that death rates in the whole city population and markedly in the age groups from two to six years have been materially reduced during the past 10 or 12 years. It is the health of Boston that concerns us all, not the health of people who have happened to come under the care of any one agency.

The Community Health Association is but one of Boston's health agencies. We have said that there are 27 such agencies operating in and through the Boston Health League, of which Dr. Mahoney is President. The method of working together through the Health League is of interest to the people of Boston.

A large sum of money, known as the White Fund, is to be used to build and equip health centers under the Department of Health. The Boston Health League is working to make these centers as effective as well-directed, coördinated effort can make them. A common record system has been developed and will be put into effect both in the present Municipal Health Center on Blossom Street and in the East Boston Center, headquarters of the Boston Health League. Regular meetings of a representative district committee and regular meetings of a local conference of agencies are to be a part of the routine in each health center.

It is a reproach to us in Boston that there is not a public opinion intelligent enough and sufficiently well informed to back up our Commissioner of Health so that he might have as large a budget as he needs. Without a well-informed public opinion, no one can go far in Community Health work. The local committees attached to the health centers and connected with the Community Health Association (the 300 already enlisted in our committee work might well be increased to 1500 in a city of 750,000) will form public opinion and be a strong support for the Commissioner in time to come, to enable him to carry out the plans he formulates.

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Book Reviews

Chronic Fatigue Intoxication. By Edward H. Ochsner. New York: G. E. Stechert & Co. 1923.

In this little volume there is an attempt to describe many different syndromes under the heading of one disease. So protean are the manifestations of this so-called chronic fatigue intoxication that it would contain a large proportion of all medical diagnoses were it ever accepted as an entity. There is no good evidence and no scientific data in the book which would justify the coining of a diagnosis which, at best, would be of value only as a new medical phrase.

Practical Morbid Histology. A Handbook for the Use of Students and Practitioners. By Robert Donaldson, M.A., M.D. London: William Heinemann. 1923. 364 pages.

This work is unique in the complete absence of illustrations. It is intended, according to the preface, to be used in connection with a course in pathological histology where the student has access to microscopic preparations illustrating the subject. It is essentially a series of lectures without illustrations, admirably written, conservative, but on the whole up-to-date. It is, of course, possible to take exceptions to the presentation of certain subjects, involving the classification of disease processes, but this applies to every text-book of pathology.

The book should prove to be of value to students of pathology for the purposes of review, likewise to physicians who wish to acquire further knowledge of pathology with a view to keeping abreast in the subject. The value of the book would be greatly enhanced if references were inserted for guidance in supplementary reading.

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THE NEW ENGLAND TUBERCULOSIS CONFERENCE

THE eighth annual conference of this organization met in Worcester at the Hotel Bancroft, September 12. The component bodies are the Connecticut Tuberculosis Commission, the Maine Public Health Association, the Massachusetts Tuberculosis League, the New Hampshire Tuberculosis Association, the Vermont Tuberculosis Association, the Rhode Island Tuberculosis Association, and the Massachusetts State Department of Public Health.

There were about two hundred persons in attendance. Dr. Kendall Emerson presided at the opening exercises and outlined the purposes of the organizations engaged in public health work and especially those features pertaining to the prevention of tuberculosis.

Hon. P. F. Sullivan, Mayor of the City, welcomed the visitors to Worcester and told of his great interest in the problems to be considered. He regretted that Worcester could not entertain the visitors in a lavish manner because of lack of suitable provisions in the budget.

Dr. Willis E. Chandler, President of the Conference, responded, paying merited tribute to the city of Worcester, speaking of the enterprise of its citizens and its standing among cities of the Nation.

The address of Dr. Linsly R. Williams, Managing Director of the National Tuberculosis Association, was a clear explanation of the functions, purposes and activities of the National Tuberculosis Association, the details of which many may not have known. It was especially well shown that the National Association is closely associated with the subsidiary organizations and is ready to act in an advisory capacity at all times, and has been successful in adjusting difficulties between organizations which have arisen through misunderstanding or other reasons.

Dr. Kelley's address was clear cut and logical throughout and presented in orderly sequence the successive steps taken by those who have tried to solve the tuberculosis problems, explaining how each scheme had had certain defects, although contributing to the present better understanding of the most important factors which will aid in reducing the incidence of tuberculosis. He deplored the over-enthusiastic predictions of those optimists who had claimed that tuberculosis would be diminished to the irreducible minimum in a short time, and made as his important contention that since the infection occurs in the first few years of the child's life and the average development of the disease comes in early adult life as a rule, that the greatest hope lies in the concentration of attention upon those children who show evidence of lowered resistance as demonstrated by underweight, poor physique, and frequent exhibition of other forms of ill health. Especial emphasis was placed on the necessity of eradicating bovine tuberculosis and the employment of pasteurized milk.

The agencies now at our command if applied intelligently will establish powers of resistance in the child that will prevent the development of tuberculosis later, so that if we are ready to treat all suspects among children the time is not far distant when the disease will show the same proportion of decrease as has been secured in the typhoid rate. This address was one of the best given in recent years by speakers on this subject and showed a thorough grasp of the subject.

The address of Professor C. E. Turner of the Massachusetts Institute of Technology covered the problems of health education as it should be applied in school life.

The arguments were based on three features of the child's education: First, the protection of health; second, the correction of defects, and third, the promotion of health. Each feature of this program was fully considered and the earlier difficulties encountered were explained. The speaker felt that the attitude of people had been undergoing changes so that now it is much easier to secure coöperation of school boards than formerly.

The place of the modern health crusade in the general child health program was very fully set forth by Miss Strachan of the National Tuberculosis Association.

The latter part of the afternoon was given over to the public health nurses, and during the discussions the difficulties encountered in this type of health work were discussed.

In the evening Dr. Horace LoGrosso of the Adam Memorial Hospital, Perrysburg, N. Y., told of the development of heliotherapy in the treatment of tuberculosis of bones, joints, peritoneum, and lymphatic glands. The proper application of solar rays in this institution has practically displaced surgery in the treatment of these forms of tuberculosis. He has discarded plaster casts and in proper cases employs fixation apparatus so constructed that the sun's rays may not be obstructed.

The application of sunlight is begun cautiously and the time of exposure is gradually lengthened as the patient becomes accustomed to the treatment.

It was noted that great care has to be exercised not to use the treatment beyond the proper dosage, and in summer it is found that exposure during the middle of the day may do harm.

The lecture was followed by the exhibition of photographs of cases before and after treatment, and the exhibition of these pictures indicated that these forms of tuberculosis are almost universally cured or materially benefited.

During the treatment the children spend much time out of doors with no protection other than footgear, mittens, head covering and breech cloth. The pictures showing almost naked children playing in deep snow and apparently as comfortable as well-clad persons, were impressive. The JOURNAL expects to be able to publish this paper in full.

Taken all in all the Conference was an occasion to be remembered in the annals of public health work, and those in attendance were entertained as well as instructed.

The practical details were presided over by Mr. Spencer very successfully.

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THE CELEBRATION OF THE TWENTY-FIFTH ANNIVERSARY OF THE FOUNDING OF THE RUTLAND STATE TUBERCULOSIS SANATORIUM

THE exercises were begun at 10 A.M. in the assembly room of the Sanatorium, September 13. Before opening the special celebration two hours were given to scientific discussions.

The Field of Research in the Tuberculosis Sanatorium was forcefully discussed by Dr. Stephen J. Maher, chairman of the Connecticut State Tuberculosis Commission. The objections to research in these institutions were quoted, and logical arguments presented showing that opposition to scientific research by the staffs of tuberculosis sanatoria were unsound.

The speaker contended that there are reasons for and none against research, for the men closely associated with the clinical behavior of the disease are in a more advantageous position than the strictly laboratory worker isolated in the great and complicated equipment of the large Foundations. He cited examples of knowledge acquired and demonstrated before the medical world by practitioners, and felt that the clinician would continue to add to the scientific knowledge of disease and treatment.

He outlined the plan for staff meetings in Connecticut and stated that the men connected with the state sanatoria had become recognized as foremost in the ranks of workers in this field. The address was a scholarly argument in favor of research work by the sanatorium physicians.

Dr. Trudeau's paper on the problems of adult and childhood infection as they affect the problem for the control of tuberculosis was most interesting. He felt that the theory that the development of the disease came after a long period of incubation following childhood infection was correct, for it has been practically demonstrated that at fifteen years of age three out of four children have been infected, and therefore protective measures must be applied to children and young adults, especially by removing the danger from sputum and infected milk. The anti-spitting laws should be more generally enforced. He strongly advocated pasteurization of milk.

After these papers were discussed the especial features of the celebration were in order, Dr. Kelley presiding. The Hon. J. R. Benton represented the Governor. Senator Tarbell spoke in place of the President of the State Senate, and Mr. Hull in place of the Speaker of the House. Greetings from the National Tuberculosis Sanatoria were voiced by Dr. Linsly R. Williams. Dr. A. K. Stone spoke for the former trustees and gave an interesting account of the difficulties encountered, and paid a merited tribute to those who had given great service to the State in developing the sanatoria.

Dr. E. H. Bigelow brought a message of appreciation from the Massachusetts Medical Society and Dr. Edward O. Otis spoke of the coöperation tendered by the State League in its efforts to support the policies of the State Department of Health and maintain an educational campaign throughout the State.

The Early History of the Rutland State Sanatorium was the subject of an address by Dr. V. Y. Bowditch. This address, we hope, will be published in full, for without a more general knowledge of this history future citizens will hardly realize the energy and vision of the promoters of the sanatorium plans in this Commonwealth. The State and thousands of its stricken citizens should know that it was the energy and wisdom of Dr. Alfred Worcester and his associates that gave to the world the first publicly supported tuberculosis sanatorium.

Although the speaker felt that some mistakes had been made, as is common to all human effort, the results have justified the expenditure of every cent.

Dr. H. L. Barnes, Superintendent of the State Sanatorium of Wallum Lake, R. I., read a paper under the title of "The Significance of Rutland to the Nation," in which he paid tribute to Massachusetts as a leader in the care of consumptives. He felt that much progress had been made by following the example set by this State.

After these exercises were completed the assembly was provided with a bountiful luncheon.

The celebration was an impressive ending to an important convention. Over four hundred people were in attendance, and an especially pleasing feature was the presence of many physicians who are not specialists in tuberculosis. The meetings of these two days had such attractive programs that a more general attendance by general practitioners would have been productive of much good, for the scientific discussions and historical references were inspiring.

LABORATORY SERVICE

In general, those things which are gratuitously furnished to the public are mediocre in quality; indeed anything which is "free" is justly looked upon with suspicion. Attempts to compromise the medical profession by petty generosity are constantly evident in the practitioner's office. His pencils, blotters, and medical supplies are always contaminated with advertisements which may infect a passing patient before they reach the waste basket. The physician himself usually acquires an immunity to them, and very soon learns that a price must be paid for most products of value.

But the practitioner who has used the biological products of the State Laboratory at Forest Hills for the past three years should realize what an improved service he is now receiving, and at practically the same cost. More convenient containers than those in which he now receives diphtheria antitoxin do not exist. Clear, concentrated sera, of high potency, have replaced the old murky solutions. Schick outfits which are nearly fool-proof urge him to use the latest method of prevention. If he has any doubts, a visit to the laboratory will convince him that there are no better commercial products at any price than those which are now distributed by the Commonwealth. No extravagant literature accompanies them, and they are his in any quantity for the asking.

This has all developed since the present Director took charge of the Forest Hills Laboratory. All credit to him!

THE CAMPAIGN AGAINST CANCER

The American Society for the Control of Cancer is planning the campaign for this season. Instead of a single National Cancer Week there will be a series of six cancer campaigns, one month being devoted to the subject in each of six regions in the United States and Canada. Three weeks will be devoted in each region to making ready for the campaign, the fourth to be devoted to carrying out the activities.

This great movement is the expression of the determination of the profession and the laity to save as many people as possible from horrible suffering and death. The conquest of cancer thus far depends upon its early recognition and the employment of indicated treatment. The campaigns of education in the past have saved many lives, as shown by the considerable number of people who have consulted physicians for growths that have up to the time of submitting to medical supervision shown very little evidence of malignancy.

Every physician and every other intelligent person should be allied with this movement in order that the accepted facts relating to malignant diseases should be common knowledge, to the end that competent treatment may be applied before the hopeless conditions may have developed.

Save the cancer patients from the results of ignorance and the quacks!

Doctors in every community should arrange for one or more public meetings for the dissemination of information. Application to the Managing Director, George A. Soper, Ph.D., or to F. J. Osborne, 370 Seventh Avenue, New York City, will bring information of the best ways to conduct local meetings.

GOITER IN CHICAGO

The Chicago Department of Health has made a survey of goiter in that district and finds that the disease is endemic. It is estimated that Chicago has at least 200,000 persons suffering from preventable goiter, the greatest number occurring between the ages of birth and sixteen years. The Commissioner of Health has called upon the medical profession to help in preventing the ravages of this disease. In the bulletin the pathology and etiology of the disease is outlined and the suggestion is offered that iodine should be administered to the school children. McClendon's conclusion that there is an inverse ratio between the amount of iodine in the surface water or that of shallow wells and springs is quoted. The iodine content in the water of Lake Michigan is 0.281 to 0.681 parts per billion, and this puts Chicago in the area of lowest iodine content and highest goiter incidence in the United States. The Health Department of Chicago found 9026 children among 145,465 examined to have goiter, and carrying this proportion through the total number of school children it is estimated that there are about 35,000 children of school age suffering from some form of thyroid enlargement.

Different observers have confirmed in a general way these findings.

The experience of Marine and Kimball in the prevention of goiter in the school children of Akron, Ohio, by the use of sodium iodide is impressive. It is claimed that the Japanese are practically immune to goiter because of the use of seaweed as a food.

These facts and conclusions seem to indicate that Health Departments will have to determine the existence of goiter in other localities, and if found will have to study the iodine content of water supplies.

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THE QUALITY OF MASSACHUSETTS PHYSICIANS

There were forty applicants for registration in medicine before the State Board last week. Of this number 60 per cent. were graduates of medical schools which are below Class B. Fortunately many of them will not secure the right to practice, but this large proportion shows that Massachusetts is one of the very few States which accepts applications from graduates of schools unrecognized by the Council on Medical Education of the American Medical Association.

Our Legislature has repeatedly refused to enact bills presented by the Board of Registration and the Joint Committee of the Medical Societies that would put our Commonwealth in good standing so far as regulations governing accepted medical schools are concerned.

At the present time the graduate of any medical school that gives a full four years' course and requires pre-medical study *equivalent* to a high school course may apply for registration.

Although many are rejected, some succeed in passing the Board. We are and will continue to be one of the medical dumping grounds until better laws are enacted. How long will the people permit this unenviable distinction to exist?

Miscellany

MEDICAL EXAMINATIONS IN THE BOSTON HEALTH SHOW

A meeting of representatives of various medical societies and hospitals and the Boston Health Show was held at the Boston Medical Library on August 23. After free discussion it was voted that in the opinion of those present the medical profession should coöperate with the Executive Committee of the Boston Health Show in bringing to the attention of the public the importance and benefits of periodic physical examinations as a health measure. It was further voted to request the president of the Suffolk District Medical Society, who called the meeting, to appoint a representative committee to act in coöperation with the Executive Committee of the Health Show to carry into effect the preceding vote.

The following representatives have been named:

Dr. Gerald Blake, Massachusetts General Hospital.
Dr. William H. Robey, Boston City Hospital.
Dr. Channing Frothingham, Peter Bent Brigham Hospital.
Dr. Loretta J. Cummins, New England Hospital for Women and Children.
Dr. Wilson F. Phillips, Massachusetts Homeopathic Hospital.
Dr. Hilbert F. Day, Boston Dispensary.
Dr. George S. Derby, Massachusetts Charitable Eye and Ear Infirmary.
Dr. Harold DeW. Cross, Forsyth Dental Infirmary.
Dr. Cleaveland Floyd, Boston Tuberculosis Association.
Dr. Karlton G. Percy, New England Pediatric Society.
Dr. F. C. Irving, Boston Lying-In Hospital.
Dr. B. S. Greenberg, Beth Israel Hospital.
Dr. Richard G. Wadsworth, Free Hospital for Women.
Dr. Henry S. Rowen, St. Elizabeth's Hospital.
Dr. John F. Fennessey, Carney Hospital.
Dr. G. A. Leland, Jr., Huntington Hospital.

The action taken at this meeting does not conflict with the decision of a previous meeting already reported in the Journal that it is not wise to undertake a public demonstration of such a personal and confidential matter as a physical examination.

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MEETING OF ANESTHETISTS

A joint meeting of the Boston Society of Anesthetists, Providence Society of Anesthetists, Second District Dental Society, New York, Third District Dental Society, New York, with the New York Society of Anesthetists, Dr. Med. Charles H. Sanford, President, Dr. Med. A. F. Erdmann, Secretary, was held in Albany, N. Y., September 20, 1923.

The following program was presented:

Psychology in Anesthesia, J. J. Buettner, M.D., Syracuse, N. Y., Memorial Hospital.

The Correct Position of the Head During Anesthesia, A. Ernest Gallant, M.D., New York, by invitation.

Atropin in Preventing Respiratory Sequelae, Mary A. Leavitt, M.D., Boston, Mass., Massachusetts Homeopathic Hospital.

Breath Holding Test in Evaluating Patients for Anesthesia, F. H. McMechan, M.D., Avon Lake, Ohio, National Secretary.

A. H. Miller, M.D., Providence, R. I., Rhode Island Hospital.

The Workmen's Compensation Law and the Anesthetist, A. H. Rodgers, M.D., Corning, N. Y.

The Light-Anesthetic Idea, Anna M. Stuart, M.D., Elmira, N. Y., Arnot-Ogden Hospital.

Recent Observations in Europe of Anesthetic Procedures, M. Ecker, D.D.S., New York.

Analgesia and Deep Anesthesia with Nitrous Oxid and Oxygen, A. Robinson, D.D.S., Albany, N. Y.

Dr. McMechan introduced the subject of organizing the Eastern Society of Anesthetists.

THE SPRINGFIELD ACADEMY OF MEDICINE

The first regular meeting of the Academy was held Tuesday, September 11, 1923, at 137½ State Street, at 8.30 P.M.

Dr. Emanuel Libman, Professor of Clinical Medicine at the College of Physicians and Surgeons, Columbia University, New York City, read the paper of the evening entitled, "Pain in the Cardiac Area."

Discussion was opened by Drs. Bacon and Leary.

Dr. Libman is an attending physician at Mt. Sinai Hospital, New York City.

Luncheon was served after the meeting.

Officers and committees for 1923-24 are as follows: President, John M. Birnie, 27 High Street; First Vice-President, Harry F. Byrnes; Second Vice-President, R. S. Benner; Secretary, James A. Seaman, 573 State Street; Treasurer, Ira N. Kilburn, 40 High Street.

Board of Directors: Philip Kilroy, G. D. Weston, 1924; T. G. Alcorn, L. D. Chapin, 1925; E. A. Bates, E. L. Davis, 1926; R. B. Ober, Seth Lewis, 1927; T. S. Bacon, J. M. Tracy, 1928.

Board of Censors: F. D. Jones, 1924; C. A. Schillander, 1925; F. K. Dutton, 1926; F. C. Hagler, 1927; R. A. Rochford, 1928.

House Committee: H. W. Van Allen, George Corcoran, H. F. Buddington.

Registry Committee: F. K. Dutton, Seth Lewis, H. R. Wheet.

Library Committee: A. C. Eastman, E. H. Judd, H. C. Martin.

Legislative Committee: Philip Kilroy, H. W. Van Allen, H. L. Smith.

Meetings are held on the second Tuesday of each month.

WORCESTER DISTRICT MEDICAL SOCIETY

The first regular meeting of the Society was held Wednesday, September 12, 8 P.M., at the University Club rooms, 377 Main Street, Worcester.

PROGRAM

1. X-Ray Treatment of Pertussis. Dr. H. I. Bowditch, Boston.
2. A Study of the Treatment of 1000 Cases of Pertussis. Dr. W. W. McKibben.
3. Pyelitis in Infancy. Dr. C. A. Sparrow.
4. Thymic Asthma. Dr. G. N. Cobb.

Discussion of all the papers was opened by Dr. Bowditch.

Following the program there was a social hour and for those who desired, a light buffet lunch was served.

In response to Dr. Marsh's appeal sixty-five members have signified their intention of purchasing Dr. Burrage's "History of the Massachusetts Medical Society." While this is a good showing, it is hoped that a still larger number will subscribe.

Outline of the program of medical meetings for 1923 and 1924:

October 10.—At Worcester State Hospital. Paper by Dr. Reginald Fitz of Boston, Insulin in the Treatment of Diabetes. Paper by Dr. Edward Taylor of Boston, Encephalitis Lethargica. Worcester District North has been invited to this meeting.

November 14.—In Whitinsville. Paper by Dr. Channing Frothingham of Boston, Post-Influenzal Chest Complications. At this meeting we hope to have a paper dealing with the subject of empyema and lung abscess.

December 12.—In Worcester. Surgery of the Pancreas. Papers by Dr. Fred B. Lund of Boston, Dr. Michael F. Fallon and Dr. Walter Seelye of Worcester.

The meetings of January 9, February 13, and March 13 will be held at St. Vincent, Memorial, and City Hospitals. Programs to be arranged by members of the individual staffs.

April 10.—A public meeting. Subject, Preventive Medicine.

May 8.—The Annual Meeting.

Any necessary changes in this outline will appear in subsequent notices.

The Wachusett Medical Improvement Society held a meeting Wednesday, September 5th, at the Svea Gille Club, Lake Quinsigamond. The following papers were read: "Oriental Medicine and Surgery," Arthur K. Yoosuf, M.D.; "Emergency Service of Worcester Police Department," Richard J. Shannahan, M.D.; "Diagnosis of Early Syphilis," John A. MacFadyen, M.D.

The following have been appointed physicians to Holden District Hospital: Drs. Harry W. Trask, West Boylston, and William B. Davidson, Rutland, thus filling vacancies resulting from the deaths of Drs. Clifford W. Stickney and John P. Rand.

Dr. Theodore L. Story, Hartford, Conn., Assistant Surgical Director of the Travelers Insurance Company, will become associated with Drs. Washburn and Rice, Holden, Mass., about November 1.

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FRANKLIN AND HAMPSHIRE DISTRICT

A JOINT meeting of the Franklin and Hampshire District Medical Societies was held at South Deerfield, at the Lathrop Hotel, on Tuesday, September 11, at 3.30 P.M. "Notes on the Recent Developments in Radiotherapy" was the subject of the paper of the afternoon. Dinner was served after the meeting.

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DIABETIC COLUMN

Every physician is now seeing diabetic patients who have heard about insulin and who hope to be cured with it. According to our present knowledge insulin does not cure the disease in any strict sense of the word. Insulin, however, has a most important therapeutic value for diabetes as it enables the diabetic organism to burn sugar in amounts otherwise impossible. As a result, the glucose tolerance of any case can be increased and thus more food can be assimilated without producing glycosuria or acidosis.

Diabetics who may need to receive insulin should be told that insulin will not cure them. They must understand that if they need insulin at all, they will probably need to take it in one or more subcutaneous injections a day for a long period of time. Finally, they must be made to realize that while they will be able to eat more food with insulin than without it, yet they will not be able to eat whatever they like, but will have to continue living on a prescribed diet.

REGINALD FITZ, M.D.

News Items

DR. DANIEL B. REARDON of Quincy, Mass., has returned from a three months' tour of Europe.

ENGAGEMENT.—The announcement has been made of the engagement of Miss Anna Belle McKenzie to Dr. Halbert G. Stetson of Greenfield.

WEEK'S DEATH RATE IN BOSTON.—During the week ending September 8, 1923, the number of deaths reported was 138, against 166 last year, with a rate of 9.34, against 11.30 last year. There were 19 deaths under one year of age, against 33 last year. The number of cases of principal reportable diseases were: Diphtheria, 69; scarlet fever, 17; measles, 8; whooping cough, 14; typhoid fever, 7; tuberculosis, 44. Included in the above were the following cases of non-residents: Diphtheria, 5; scarlet fever, 1; measles, 1; typhoid fever, 1; tuberculosis, 6. Total deaths from these diseases were: Diphtheria, 2; measles, 1; tuberculosis, 4. Included in the above were the following cases of non-residents: Tuberculosis, 2.

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Obituary

MERRICK LINCOLN, M.D.

DR. MERRICK LINCOLN of Worcester died in St. Barnabas Hospital, Portland, on September 3, from acute nephritis following an attack of bronchitis. He was graduated from Harvard College in 1896 and from the Medical School with the class of 1900. Subsequently he served as Medical House Officer at the Massachusetts General Hospital and spent a year of study in the clinics of Vienna and Berlin. With this excellent equipment Dr. Lincoln began practice in Worcester, confining his work to internal medicine and of late years specializing in pediatrics. He served for a time as Gastro-Enterologist at the City Hospital, and was for many years an honored member of the staff of Memorial Hospital. His interest in the District Medical Society was always keen, and he served for many years as Librarian for the Society. For a number of years he acted as City Physician for Worcester.

In spite of the fact that his health was impaired at the time, he enlisted in the Medical Corps at the time of our entry into the World War and rendered hard and valued service in several of the American camps, being discharged in 1919 with the rank of Major. The strain of this service undoubtedly aggravated an incipient renal condition, and his ill health increased rapidly after his return to private practice in Worcester. Not many months ago, after a severe hemorrhage, he asked his medical adviser if it was wise for him to continue his work. The answer could only be in the negative. His reply, "Well, I'll see it through anyhow," was typical of the sturdy determination that had quietly carried him through the years of failing health. In four days he was back at the work he loved and which he continued with energy until the beginning of his vacation in mid-August. His death came as a great shock, even to those who knew of his serious condition, for up to the last he concealed from his friends the heroic fight he was waging.

A quiet, thoughtful man with trained mind and heart, occupying a distinguished position as an internist in his community, commanding the unvarying respect of his fellows, Dr. Lincoln's loss is a severe blow to medical practice in Worcester. His health did not permit of wide activities outside his profession, but to his colleagues on the hospital staff, and perhaps most of all to the internes whom he instructed, the scientific accuracy and detail of his work and his fidelity to the highest ideals of medicine will remain a treasured inspiration toward the continuance of the standards which he set for himself and maintained.

FRANK WALLACE PATCH, M.D.

Dr. Frank Wallace Patch, proprietor of Woodside Cottages, a private Sanatorium at Framingham, Mass., died suddenly while visiting a friend in Boston, September 7, 1923, at the age of sixty.

Dr. Patch was born at Wayland, Mass., March 22, 1862, the son of Samuel and Elizabeth J. Noyes Patch. After graduating from Boston University School of Medicine in 1888 he studied at the Rotunda Hospital in Dublin, and coming home, settled in general practice in Framingham. He established his Sanatorium in 1900. He had been president of the Framingham Improvement Association, a member of the consulting board of the Westboro State Hospital, president of the International Hahnemannian Association, and of the Massachusetts Homoeopathic Medical Society.

He is survived by two children and by his second wife, who was Miss Virginia Allen of Petersburg, Va.

DR. GEORGE B. SHATTUCK

RESOLUTIONS PASSED BY THE SENIOR STAFF OF THE BOSTON CITY HOSPITAL, SEPTEMBER 6, 1923

For thirty-one years, from 1878 to 1909, Dr. George B. Shattuck was Visiting Physician at the Boston City Hospital, and from that time until his death on March 12, 1923, he was Senior Physician. In 1868, he served a term as House Officer. For all these years the hospital had the benefit of his wise counsel, professional skill, and kindly presence. In his professional work he was thoughtful and deliberate. He had a fund of common sense, which was of special value both to his patients and his colleagues. Many of his opinions were expressed with a kindly humor, which has left them indelibly impressed upon the minds of his associates and of those who were fortunate enough to serve under him as house officers. Many a bubble of ignorance or self-esteem was pricked by the rapier of his wit. To say, as is usually done, that in his death the staff of the hospital have suffered an irreparable loss, means little to those who did not know him. Only those who were long associated with him in professional and personal relations can realize what it really does mean.

Of his individual contributions, the various papers which he wrote on typhoid fever are especially notable. He was editor for many years of the Boston Medical and Surgical Journal, and conducted it so well that it became one of the best medical journals in the country. As an editorial writer, his work was distinguished both for wisdom and felicity of expression. As President of the Massachusetts Medical Society, he brought honor and credit to the hospital. His gentle, dignified presence, his loyalty to his friends, his unfailing kindness to those of whom he approved among the younger members of the profession, and the practical assistance he gave, many of them will never forget.

"Take him for all and all" he was a man,—we shall not look upon his like again. The staff of the hospital thus endeavor inadequately to express the feeling of personal loss, their pride in his career during the long period of his service, and their appreciation of his great contributions to the reputation and standing of the hospital.

(Signed) Fred B. Lund,
John L. Ames,
Edward N. Libby.

Correspondence

BRISTOL NORTH DISTRICT MEDICAL SOCIETY

Mr. Editor:

The fall meeting of the Bristol North District Medical Society will be held Thursday, September 20, 1923, at the Bristol County Tuberculosis Hospital, Oak Avenue, Attleboro. At that time a date will be set for the meeting next year, and also a joint meeting with Bristol South, Plymouth and Barnstable Districts at the Lakeville Sanitarium. I will have to wait for this meeting before informing you.

A committee was appointed for the propagation of information of the Schick test and diphtheria prevention, and held a meeting September 14 at Attleboro. There will be further meetings or public lectures at Mansfield and Taunton.

Joseph L. Murphy, *Secretary.*

SOUTHERN MEDICAL ASSOCIATION ALUMNI DINNER

Mr. Editor:

During the meeting of the Southern Medical Association it is hoped that the Alumni of each of the Medical Schools represented will meet together at dinner. The evening of Wednesday, November 14, has been set apart for that purpose and dining-rooms have been already engaged.

The Committee desires to know approximately the number of diners to be expected at each of these reunions. Those who expect to attend should therefore notify the undersigned by the end of October.

Tom A. Williams,
Chairman Alumni Dinners,
Southern Medical Association.

1746 K Street, Washington, D. C.

NOTICES

A COURSE OF FIFTEEN LECTURES ON THE MENTAL HEALTH OF CHILDREN

will be given in Boston University School of Education by eminent experts on child health under the direction of J. Mace Andress, Ph.D., Head of the Department of Psychology and Child Study, Boston Normal School, and with the coöperation and endorsement of the Massachusetts Society for Mental Hygiene.

The lectures will be given on successive Monday evenings, at 8 o'clock, in Jacob Sleeper Hall, Boston University, 688 Boylston Street, Boston, from October 1 to December 17, 1923, January 7, 14, 21, 1924.

The course will be of practical value for teachers, mothers, ministers, social workers, and for all who are responsible for the training of children.

The subjects and speakers are as follows:

October 1. "Mental Hygiene and Modern Trends in Psychology," J. Mace Andress, Ph.D., Head of Department of Psychology, Boston Normal School.

October 8. "Heredity and Environment as a Basis of Mental Health." Abraham Myerson, M.D., Professor of Neurology, Tufts Medical School; Consulting Neurologist, Boston Psychopathic Hospital.

October 15. "The Mental Hygiene of the Home." Abraham Myerson, M.D.

October 22. "Mental Trouble in the Making." Douglas A. Thom, M.D., Director, Habit Clinic, Community Health Association; Director, State Division of Mental Hygiene.

October 29. "The Education of the Emotions." Miner H. A. Evans, M.D., LL.B., Assistant Physician, Department of Nervous Diseases, Boston City Hospital.

November 5. "The Contribution of Mental Hygiene to School Instruction." William H. Burnham, Ph.D., Professor of Education and School Hygiene, Clark University; formerly President, Massachusetts Society for Mental Hygiene.

November 12. "Common Sense in Intelligence Testing." Arthur W. Kallom, A.M., Assistant Director, Department of Investigation and Measurement, Boston Public Schools.

November 19. "Salvaging the Feeble-Minded Child." Walter E. Fernald, M.D., Superintendent, Massachusetts School for the Feeble-Minded, Waverley.

November 26. "Vocational Guidance and Mental Health." George K. Pratt, M.D., Medical Director, Massachusetts Society for Mental Hygiene, Boston.

December 3. "School Entrance and the Pre-School Age." Arnold Gesell, Ph.D., M.D., Professor of Child Hygiene, Yale University, and Director Yale University Psycho-Clinic.

December 10. "High School—The Breaking Point." Frankwood E. Williams, M.D., Medical Director, National Committee for Mental Hygiene, New York City.

December 17. "Understanding the Wayward Child." Augusta F. Bronner, Ph.D., Director, Judge Baker Foundation, Boston.

January 7. "The Wayward Child in Court." Herbert C. Parsons, Massachusetts State Commissioner of Probation.

January 14. "Nervousness in the Light of Modern Psychology." Martin W. Peck, M.D., Chief, Out-Patient Department, Boston Psychopathic Hospital.

January 21. "The Mental Health of Normal Children." J. Mace Andress, Ph.D., Head of Department of Psychology, Boston Normal School.

For particulars relating to fees for the course or single lectures, apply to the Massachusetts Society for Mental Hygiene.

FRANKLIN DISTRICT MEDICAL SOCIETY

The society meets at Greenfield the second Tuesday of November, January, March, May, July, September. Annual meeting in May.

NEW ENGLAND SOCIETY OF PSYCHIATRY

The semi-annual meeting of the New England Society of Psychiatry will be held at the Concord State Hospital, Concord, N. H., on Wednesday, October 3. An interesting program has been provided.

Trains for Concord will leave the North Station, Boston, Mass., at 9 a. m. and 10 a. m., arriving at Concord at 11.05 a. m. and 12.06 a. m., respectively, Eastern standard time.

NORFOLK SOUTH DISTRICT

Meetings are held on the first Thursday of each month at 11.30 A.M. The October meeting will be held at the Norfolk County Hospital, Braintree. The November, December, January, February, March, April and May meetings will be held at the United States Hotel, Boston. The November, February, and May meetings are Stated Meetings.

SOCIETY MEETINGS

DISTRICT SOCIETIES

Worcester District:—The meetings for the year are as follows:

October 10 at Worcester State Hospital. Papers by Dr. Reginald Fitz and Dr. E. W. Taylor of Boston.

November 14 in Whitinsville. Paper by Dr. Channing Frothingham of Boston.

December 12 in Worcester. Papers by Dr. Fred B. Lund of Boston and Dr. Michael F. Fallon and Dr. Walter Seelye of Worcester.

January 9 at St. Vincent Hospital, Worcester.
February 13 at Memorial Hospital, Worcester.
March 13 at City Hospital, Worcester.
April 10—A public meeting.
May 8—Annual Meeting.

Franklin District:—Society meets at Greenfield the second Tuesday of November, January, March, May, July, September. Annual Meeting in May.

Norfolk South District:—Meetings first Thursday of each month at 11.30 a. m. October at Norfolk County Hospital, Braintree; November, December, January, February, March, April, and May at United States Hotel, Boston. The November, February and May meetings are Stated Meetings.

Essex North:—Combined meeting with Middlesex North, Middlesex East and Essex South in October. Semi-annual meeting at Haverhill, January 2, 1924. Annual Meeting at Lawrence, May 7, 1924.

Bristol South—Semi-annual meeting will be held in New Bedford, November 1, 1923. The Annual Meeting will be held in New Bedford, May 1, 1924.

STATE, INTERSTATE AND NATIONAL SOCIETIES

October, 1923:—Semi-annual meeting of the New England Society of Psychiatry at the Concord State Hospital, Concord, N. H., October 3.

October, 1923:—Boston Health Show will be held in Boston, October 6-13, inclusive.

October, 1923:—Meeting of the American Health Association will be held in Boston, October 8-13, inclusive.

October 17-18, 1923:—Annual Meeting of New England Surgical Society in Boston.

For list of Officers of the Massachusetts Medical Society, see page xii of the Advertising Section.